Factors affecting the implementation of an electronic document and records management system

by
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Declaration

By submitting this thesis/dissertation electronically, I declare that the entirety of the work contained therein is my own, original work, and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

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Abstract

The past decade has seen a huge increase in the implementation and use of Electronic document and records management systems (EDRMS) in many public spheres. The South African government, in this case the Presidency, has now also adopted this system to comply with current legislation requiring government institutions to replace paper with electronic media as the preferred way of conducting their official business. In general, and as is evident from the available literature, it seems that Government organisations have been lagging behind in this regard.

The failure to reap the expected benefits from this step by government institutions such as the Presidency forms the basis for this investigation, which examines the failures and successes in the implementation of an EDRMS and the factors affecting this process.

The study used triangulation approach in order to arrive at a more reliable conclusion. Literature research has been used as a main data collection method for this study. It also serves as a basis for the approaches to subject matter that have been adopted. Data was also collected by conducting semi –structured interviews with government institutions, including the subject of this research, that have implemented EDRMS.

The critical factors that have had an effect on the implementation of EDRMS were found to be of a strategic, social and technical nature. The study also found similarities in the factors affecting EDRMS implementation within government and identifies the need for further research focusing on how these factors differ between various types of organisations.

Opsomming

Die afgelope dekade was daar ‘n ontsaglike toename in die instelling en toepassing van elektroniese dokument- en rekordbestuurstelsels (EDRMS) op talle openbare terreine. Die Suid-Afrikaanse regering, in hierdie geval die kantoor van die Staatspresident, het nou ook hierdie stelsel aangeneem om te voldoen aan huidige wetgewing wat staatsinstellings verplig om papier te vervang met elektroniese media as die aanbevole manier om hulle amptelike besigheid te bedryf. Oor die algemeen, en soos dit ook blyk uit die beskikbare bronne, lyk dit egter asof regeringsinstansies agter geraak het wat dit betref.

Die feit dat die verwagte voordele van hierdie stap nie deur staatsinstansies soos die Presidensie benut is nie, vorm die grondslag vir hierdie ondersoek, wat die prestasies en weiering wat gepaard gaan met die instelling van `n EDRMS en die faktore wat hierdie proses affekteer van nader beskou.

Navorsing van die literatuur is gebruik as die belangrikse datainsamelingmetode vir hierdie ondersoek. Dit dien ook as die basis vir die manier waarop die onderwerpmateriaal benader is. Data is ook ingesamel van staatsinstansies wat `n EDRMS ingestel het, soos die instansie wat hier bestudeer word.

Die kritiese faktore wat ‘n invloed gehad het op die instel van `n EDRMS het geblyk van `n strategiese, sosiale en tegnies aard te wees. Die ondersoek het ook ooreenkomste gevind in die faktore wat die instel van `n EDRMS in die regering affekteer en indentifiseer ook die behoefte aan verdere navorsing wat gerig is op hoe hierdie faktore van organisasie tot organisasie verskil.

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- the Presidency Library and Knowledge Management staff, for all the help they provided me during the research process
- the various government departments that shared their experiences and knowledge with me, thereby ensuring the success of the research
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Table of Contents

Chapter 3:

Public sector organisations 28

Chapter 4:

Literature Study on EDRMS 42

Chapter 7

Conclusions and recommendations 102

List of Figures

List of Tables

List of Abbreviations

AIIM	Association for Information and Image Management
ARMA	Association of Records Managers and Administrators
BPM	Business Process Management
DM	Document Management
DG	Director General
DAM	Digital Asset Management
ECM	Enterprise Content Management
EDMS	Electronic Document Management System
ERMS	Electronic Records Management System
EDRMS	Electronic Documents and Records Management System
ERP	Enterprise Resource Planning
ES	Enterprise Systems
GPIS	General Practitioner Information System (measurement model)
HR	Human Resources
ICT	Information and Communication Technologies
IQPC	International Quality & Productivity Centre
IDMS	Integrated Document System
IS	Information System
IT	Information Technology
KM	Knowledge Management
KMS	Knowledge Management Systems
MMS	Middle Management Staff
NARSA	National Archives and Records Services of South Africa
NWML	National Weights and Measures Laboratory

PAIA	The Promotion of Access to Information Act (Act No 2 of 2000)
PAJA	The Promotion of Administrative Justice Act (Act No 3 of 2000)
OCLC	Online Computer Library Centre
RM	Records Management
SMS	Senior Management
SITA	State Information Technology Agency
TAM	Technology Acceptance Model
WMC	Workflow Management Coalition

Chapter One
Introduction and Background

1. Introduction

Sound and secure management of documents and records is of fundamental importance in modern governance and administration. It serves in the formulation and evaluation of policy and the management of finance and personnel, thereby providing a basis for accountability. The legislation that underpins the need for sound document and records management in South Africa is:

- the National Archives and Records Service of South Africa Act (No 43 of 1996)[1]
- the Promotion of Access to Information Act (Act No 2 of 2000)[2], and
- the Promotion of Administrative Justice Act (Act No 3 of 2000)[3].

Over the past decade a lot of attention has been devoted to effective and secure document and records management in the public sector. Public sector organisations are rapidly realising the need for retrieving the right information at the right time and providing it to the right persons or bodies – electronic media are fast replacing paper as the preferred means of conducting business transactions. To function effectively, electronic records, like their paper counterparts, need to be captured, recorded and secured in a form which ensures their authenticity integrity, and accessibility.

Globally, government departments have been implementing Electronic Document and Record Management Systems (EDRMS) in order to formalise the management of structured and unstructured content within their departments. According to Johnston and Bowen[4], an

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[1] The National Archives and Records Service of South Africa Act (No 43 of 1996). http://www.dac.gov.za/acts/a43-96.pdf viewed on 15 October 2009

[2] The Promotion of Access to Information Act (Act No 2 of 2000). http://www.dfa.gov.za/department/accessinfo_act.pdf viewed on 15 October 2009

[3] The Promotion of Administrative Justice Act (Act No 3 of 2000). http://www.capegateway.gov.za/Text/2004/8/a3-00.pdf viewed on 15 October 2009

[4] Johnston G.P & Bowen D.V.2005,133

EDRMS is an automated system which supports the creation, use and maintenance of paper or electronic documents and records for the purposes of an organisation's workflow and processes. An EDRMS constitutes a foundation for any department's initiatives around establishing Enterprise Content Management.

EDRMS have recently received a lot of attention in government because of the need to comply with legislation. Other driving forces behind its popularity are the benefits that these systems can bring: cost reductions, better service delivery and a general improvement in business processes. Most government departments have sought out these systems with the expectation of gaining real business benefits from their implementation. Regrettably, most EDRMS implementations encounter challenges that can impinge negatively on the expected results and an unsuccessful attempt may result in millions of rands in fruitless expenditure. This is the rationale behind this investigation into the factors affecting EDRMS implementation in government.

1.1 The Presidency

The Presidency is the highest State office in the country. It has an overall staff complement of about 800, based at several offices in Pretoria, Cape Town, and Durban. The Union Buildings in Pretoria house the main office with a total of about 600 employees.

The broad mandate of the Presidency is to provide professional support to the President, the Deputy President and the Ministers in the Presidency in the execution of their constitutional, supervisory and executive responsibilities within the ambit of its three programmes, Administration, Communications and Executive Coordination.

In another sense, the Presidency's purpose is the monitoring and evaluation of government policies and the Program of Action. This includes improving government planning, decision-making and service delivery in accordance with the 1996 Constitution.

In terms of the Programme of Action the Presidency has the responsibility of managing other government departments, which involves ensuring that key performance targets with time frames are developed for government-wide programmes and projects. The execution and monitoring of these programmes is the overall responsibility of the Presidency.

The Presidency also communicates with public and State institutions in the form of correspondence conducted by various media, mainly on an ad-hoc basis. The Presidency relies heavily on communications and information that come from within and outside in order

to discharge its duties. In a sense the Presidency can be described as a *correspondence and information-driven* organisation. The presentation and dissemination of information is therefore vital to the success and efficiency of the Presidency.

1.1.1 Business Problem

Like most government institutions, the Presidency still largely operates on paper-intensive processes, with extensive routing of documents. The National Archives Act also requires all government departments to keep and maintain records, including electronic records – it was for this reason that a Records Manager for the Presidency was appointed in November 2005, as stipulated by the Act.

The main challenge that the Presidency Records Management Office faced at the time of its inception was that paper documents were being received and dispatched via a central registry to some seven decentralised registries scattered throughout the office. These decentralised registries mainly stored documents from Human Resources, the Presidency's director-general and private office, the Deputy Presidency, and the ministries and managed their records in their offices using their own filing systems and storage facilities. The storage and classification systems used by these units/directorates were found to be not in accordance with the National Archives Act prescripts.

Until 2004 the Presidency operated on a paper-based filing system. The shortcomings of this system were:

- delays in responding to correspondence
- loss of correspondence
- time wasted in locating files
- misplaced or misfiled files
- unnecessary duplication of documents.

The Presidency also inherited various different filing systems, which could all be linked back to previous changes in Presidential administration. Correspondence was mainly managed in several Microsoft Access databases that were used to register received documents. Electronic documents were generally received and dispatched daily via E-mail within the Presidency. Most official E-mails were dealt with by their recipients, who did not save them but simply deleted them at their own discretion.

The Presidency had no formal, consolidated document management strategy or procedure for managing its internal information. It soon became clear that the Presidency could not continue with the current methods of dealing with its documents and records.

It had to look at a new strategy, not only to streamline the process but also to comply with the acts (esp. NARSA, PAIA and PAJA) regulating State documents. A more effective, structured and efficient documents and records management system at the Presidency had to be put in place.

A solution for the electronic management of documents flowing through the Presidency had to be found, to avoid documents getting lost and to provide faster, more effective retrieval of information and documents. The system had to ensure the management of documents in a project-based environment, with the checking and notification of deadlines and a system for providing follow-up and feedback on all communications with relevant stakeholders.

1.1.2 Expected Business Benefits

To tackle the problem, the Presidency initiated a documents and records management system project to ensure that the following tangible business benefits and objectives, as outlined in the Presidency's Charter and Plan Document[5], could be achieved. These were:

- better efficiency rates in dealing with correspondence
- an 80% reduction in information queries during the first year of operation
- the 100% capturing of new unclassified documents on the electronic system within six months of its full deployment, with the exception of existing documents that did not need to be back-scanned
- a 50% reduction in internal sit-down meetings during the first year of operation by making use of collaboration functionality of the Integrated Document Management System (IDMS)[6]
- compliance with information management legislation (PAIA 2002) by means of an Access to Information manual and internal policies
- the introduction of good records management practices to support business requirements

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[5] The Presidency: Charter and Plan for the implementation of the Integrated Document Management Solution: 2004, revision 2, 01 July.

[6] The term IDMS is used to refer to the Presidency's EDRMS.

- a reduction in turn-around time between the delivery of correspondence to the Presidency and its receipt by the right person(s)
- restricting losses of correspondence to a minimum[7]

1.1.3 Implementing the EDRMS at the Presidency

The Presidency IDMS projects are based on the Price Waterhouse Coopers Summit methodology. Figure 1.1 illustrates the methodology as adopted by the State Information Technology Agency (SITA) for the Presidency IDMS.

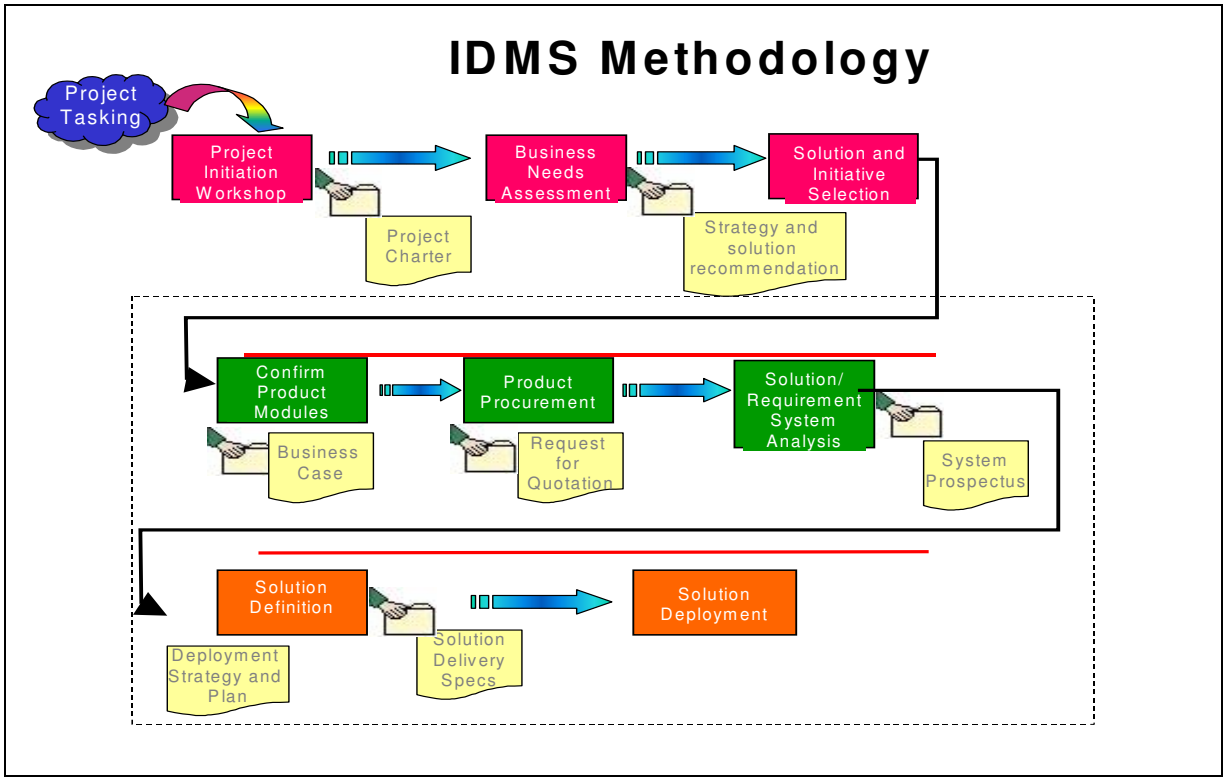

Figure 1.1: IDMS Methodology

Source: Strategy and recommendation Integrated Document Management Solution for the Presidency, Revision 1, 2003

The IDMS project at the Presidency started being installed on 1 November 2002 and was divided in three phases:

[7] The Presidency: Charter and Plan for the implementation of the Integrated Document Management Solution: 2004, revision 2, 01 July.

Phase 1: The Presidency issued a request for proposal (RFP), aimed at initiating a preliminary investigation into the required environment preparation. Together with SITA, the Presidency embarked on Phase 1 of the IDMS project. This involved an investigation into the current state of information management within the Presidency and identifying and assessing the IDMS requirements. During this analysis stage, information- and work-sessions held with the different branches to gather requirement. These requirements were consolidated and listed in the components of IDMS as summarised in the figure below.

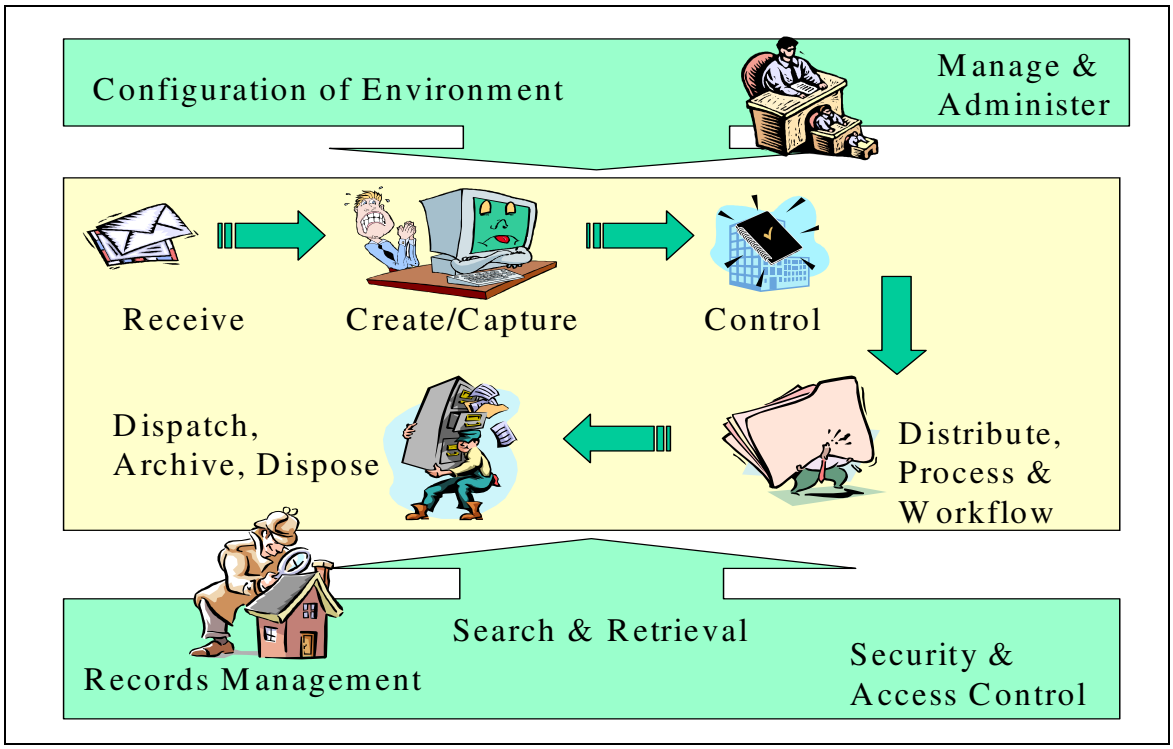

Figure 1.2: Components of IDMS

Source: Strategy and recommendation Integrated Document Management Solution for the Presidency, Revision 1, 2003

This stage also included the formation of the Project Management Team, which consisted of nominees from the Presidency, SITA and IA Systems. The Project Management Team was also mandated to act as Steering Committee.

Phase 2 (2003/03/15 – 2003/03/26): This phase involved selecting the optimal solution for the Presidency IDMS. SITA Tender 59[8] was used as a basis for the selection of an IDMS and local vendors were evaluated. Following a SITA tender process, the contract was awarded to

[8] SITA Tender 59: Enterprise Content Management Solution

IA Systems, the South African distributors of the Hummingbird product. The tender process recommended the Hummingbird Version 5.1, which consisted of the following Hummingbird product suite components:

- document management (DM), records management (RM), imaging (scanning), routing, collaboration, Web publishing, portal and knowledge management (KM) systems
- a CIC SIGN IT, an electronic signature software system
- a Hummingbird workflow system.

Phase 3 (2003/11 to 2005/5)[9]: The configuration and implementation phase – the phase that looked at the development of system documentation such as change management strategy and plan, functional design specification, IDMS related policies and procedures, system design specification, user procedure development, file plan development and training. This phase also involved the installation of the Hummingbird suite at the Union Buildings in Pretoria, culminating in the Document Management and Records Management components of the system going live in 2005.

The implementation process was initiated with the employees based at the Union Buildings at the time. The primary consideration in going live was that effective training was to be one of the key areas in getting stakeholders at all levels to buy into the system. Representatives from different units received "super-user"[10] intensive training before all other end users. This was followed by intensive group training, conducted by IA Systems. The training covered all core Hummingbird suite modules: DM, RM, Portal, Collaboration and Knowledge Management.

A majority of the users who were trained considered the training too complex and after the initial training period only some 20% of the trained users were active on the system. A decision was made to change the training strategy and concentrate only on the Document Management and Records Management functionalities of the system. One-on-one training rather than group training was introduced to the users. This was a time-consuming but necessary exercise, which resulted in a substantial increase in system usage levels.

The *file plan* was highlighted as a critical factor in the implementation of the IDMS project. The new functional *file plan* was developed and it involved comprehensive consultation with

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[9] Phases 1- 3 of the project: The Presidency: Charter and Plan for the implementation of the Integrated Document Management Solution: 2004, revision 2, 01 July.

[10] Super users: These are users that were given extensive training on technical and functional aspects of the application to be able to support average users.

business units and a lot of change management intervention. This was implemented as a parallel process to the system going live.

Presidency business processes were also examined and mapped. It was decided that the implementation of the processes would be in phases, with three processes being implemented first. The successful go-live of the three processes would serve as a pilot and demonstrate the benefits of the IDMS to the entire Presidency. It would then serve as marketing tool for the project team in the implementation of subsequent processes.

As a correspondence-driven organisation, the Presidency wanted to start by implementing the correspondence process in 2005, which started with the Private Office of the President as a pilot and was subsequently extended to the Deputy President's office, the Minister's office, the Director General's (DG) office and all other units which deal with correspondence.

It was recognised at the inception of the project that the Central Registry is the core of effective document control and at this stage of the project it was set up to perform all the functions related to the IDMS. The Central Registry now receives all mail items on behalf of the Presidency. All paper-based correspondence documents are scanned, indexed and filed in the registry after being scanning according to the indexing process defined for the IDMS.

1.1.4 Implementation Review

The benefits achieved since the implementation can be summarised as follows:

Former procedure (prior to IDMS)	New procedure
Receive paper documents	Receive electronic documents
Distribute paper document via messenger	Send link of electronic document to other users
Working in silos	introducing a culture of information sharing
File documents at personal discretion	File and index documents into the IDMS according to the approved filing plan
Manage own E-mail	Manage and file E-mail
Limited information searches	Search for information across Presidency
No records management policies and procedures	Records and IDMS Management policies and procedures drafted

Table 1.1: IDMS benefits comparison

Source*: Comparisons compiled by author*

1.2 The Research Problem

The success of the EDRMS implementation at the Presidency is not only to be measured in terms of implementing the system on time and on budget, but also on the ability and willingness of the staff to use the system effectively to its full potential. The post-implementation review suggests that while there have been tangible benefits after the implementation of EDRMS at the Presidency, so far only about 50% of the targets stated in the Presidency Project Charter and Plan Document have been achieved – there are still some users who are not making full use of the system, although they have been trained and retrained in its use.[11]

At present, about five years after the implementation of the system, the EDRMS monthly reports show that not all staff members required to do so are using the system on a regular basis. Usage has stalled, with only about 60% of users doing all their official work on the system.

People must believe in the necessity for change, if they are to support it. The implementation of the EDRMS at the Presidency has brought about clear changes to the processes and the way the staff do their work, but many users view this change as a threat while some do not see any benefits in using it. By investigating the factors hampering the effective implementation of EDRMS, we might be in the position to understand why investing in the system has not yielded the expected benefits or results.

The research problem, which relates to the EDRMS implementation at the Presidency and its results, can be stated as a question:

> *What are the factors affecting the effective implementation of EDRMS at the Presidency?*

This research project will endeavour to find answers to this question, taking into account the available literature on the topic.

[11]The Presidency: IDMS Post Implementation Review, 2007

1.3 Research Objectives

The key objective of this study is to develop a framework for the successful implementation of EDRMS in all government institutions, with specific reference to the experience gained from such an initiative at the Presidency. An understanding of the various factors that may lead either to success or to failure has becoming vital, in view of the resources that the Government has spent and will spend in implementing EDRMS. To achieve this key objective, the research will

- investigate various experiences of EDRMS implementation in government and analyse factors affecting the implementing of EDRMS with special reference to the Presidency
- use the information obtained from a review of the literature on EDRMS, from interviews and observation, and apply inductive reasoning to this information to create the foundation for developing a suitable framework for implementation.

1.4 Importance of the study

Driven by the growing need for compliance, risk management and other factors, Governments worldwide are turning to EDRMS in the hope that such systems can save costs and lead to more effective governance. The situation is stated in global terms on the itweb [12] website:

> *Compliance and legal issues are driving records management market growth, from under $100 million in 2004 to $709 million last year; it is expected to reach $1, 6 billion by the end of the year, according to Forrester Research.*

In South Africa, Acts such as PAIA are forcing Government to regulate the manner in which their corporate records are retained, managed and destroyed. The Government of South Africa is also committed to upholding democracy, based on the eight principles of Batho Pele[13], three of which are committed to promoting the public right to information, namely access, openness and transparency. Presidency is not exempted from these regulatory obligations; it may even be under more pressure to lead by example in its governance.

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[12] *Legal issues spur growth of records management* http://www.itweb.co.za/index.php?option=com_content&view=article&id=7128&catid=154%3Ait-governance-and-risk-management&Itemid=66, viewed on 04/10/2010

[13] Batho Pele Principles :http://www.dpsa.gov.za/batho-pele/Principles.asp, viewed on 04/05/2010

This study is conducted at a time where EDRMS are still very much in their early stages and government organisations are increasingly searching for the correct EDRMS solutions. This study is considered to be of great importance, as it is rare to hear the Government announcing any success stories, even within two or three years of implementing such systems.

The immaturity of EDRMS implementations is also evident from their low success rates, which have been high on the agendas of many records management conferences and forums. Difficulties in implementing an EDRMS have also been cited in a variety of international literatures and case studies. Little research has been done in South Africa in general and in Government in particular to see why such systems do not yield the desired results in terms of implementation and participation.

Although the study focuses on the Presidency, it is conducted with the expectation that its contribution will extend beyond the Presidency and provide guidance and recommendations to other organisations and professionals who are considering implementing an EDRMS or have already done so.

The importance of this study is further emphasised by Laudon & Laudon's[14] statement:

> *…a high percentage of enterprise applications fail to be fully implemented or to meet the goals of their users, even after three years of work. Many enterprise applications and re-engineering projects have been undermined by poor implementation and change management practices that failed to address employees' concerns about change.*

1.5 Research Design

The research methodology followed in this study is one of triangulation, which can be defined as the gathering of data from several (at least three) sources in order to arrive at a more reliable conclusion. The main body of the data collected for this study emanates from the literature, while secondary data relating to the EDRMS project at the Presidency was sourced from the Project Charter, Project Plan, Project Reports and specification documents. The literature and case studies around EDRMS implementations were also analysed, providing a historical perspective to the project and also a context in which interview responses could be interpreted.

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[14] Laudon K. B & Laudon J. P. 2006,556

The study also utilised semi-structured interviews conducted with four other organisations that recently implemented EDRMS. Open-ended questions were used, to create the opportunity for interviewees to express non-explicit personal views, thoughts, beliefs, values and attitudes.

The observation method was also used to collect information about the organisation under study. Personal observation was also selected as the research method for several reasons: it made it possible to study otherwise inaccessible information as well as to receive detailed information about the EDRMS implementation at the Presidency at first hand. It also facilitated a holistic interpretation of the situation.

1.7 Outline of the Study

The study is divided into the following seven chapters:

Chapter 1 – Introduction and Background

Chapter 1 provides the background and an introduction to the research and the organisation under study, states the research problem and the objectives of the study and introduces the research methodology.

Chapter 2 – Research Methodology

This chapter outlines research methodology and gives reasons for the proposed research strategy. The chapter also gives a comprehensive discussion of the data collection process utilised for the study, sampling methods, research design.

Chapter 3 – Public Sector Institutions

The chapter highlights key elements in institutions with special reference to the Government's EDRMS implementation.

Chapter 4 – Literature Study on EDRMS

This chapter reviews the literature studied on EDRMS implementation. It also serves as a guide to possible approaches taken in the subject matter. The literature also helped to shape the interview questions.

Chapter 5 – Factors affecting EDRMS implementation framework

This chapter reports on the results of the study and gives an analysis of the results. Using the appropriate analysis techniques, which are aligned with the research methodology, the data will is analysed with the objective of addressing the problem statement and to propose a framework.

Chapter 6 – Comparison of the framework with the Presidency EDRMS implementation

This chapter will focus on key factors affecting EDRMS implementation at the Presidency. The framework discussed in Chapter 5 is compared and contrasted with the Presidency-specific implementation.

Chapter 7 – Conclusion and Recommendations

This chapter gives conclusions and recommendations derived from the findings of the survey and how the findings relate to the research question. The chapter will also highlight areas for possible future research.

1.7 Conclusion

This chapter has given an introduction and general background to the study while a brief background about the EDRMS implementation at The Presidency is outlined as well. The chapter also introduces the research problem, identifies the objectives of the study, the importance of the study, the research method used for the study and an outline of the chapters that will be discussed.

Chapter Two
Research Methodology

2. Introduction

This chapter gives a detailed description of the research methodology. It describes the qualitative research methodology and data collection methods and qualitative data analysis. Data collection, including sources of data, population under study, sampling methods, data collection techniques, has been extensively covered. The chapter closes by discussing the reliability and authenticity of the research.

2.1 Research design

A research design is the plan according to which research participants are found and how information is collected from them. In it, the researcher describes what he or she is going to do with the participants, with the view of reaching conclusions about the research question.[15] It also focuses on the method that a researcher needs to consider and techniques that can be used for the collection of data.[16]

This study investigates the factors affecting the implementation of EDRMS at The Presidency.

2.1.1 The population under study and sampling

In research terms, a "population" can be defined as an aggregate of all cases that conform to some designated set of specifications. The research problem case is used to determine the population that is to be studied.[17] For the purposes of this study, all Government departments that have implemented EDRMS represent the target population.

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[15] Welman et al. 2005,52

[16] Williamson et al. 2000, 292

[17] Nachmias C.F & Nachmias D.1996, 180

Once the population has been defined, the next step is to draw a sample that represents the population being studied. The listing of all units in the population from which the researcher can select a sample, is called a sampling frame.

Nachmias &Nachmias[18] stress the fact that a sample is considered to be representative if the analyses made using the researcher's sampling units produce results similar to those that would have been obtained, had the researcher analysed the entire population.

The SITA provides a list of Government departments that have implemented EDRMS. The researcher was very careful in looking at the sampling frame and considered all factors that could affect it, such as an incomplete list due to the list not having been recently updated. The department's contact information and the person responsible for the EDRMS were extracted from the list and by liaising with the service provider who implemented the same software as in The Presidency.

Most research methodology literature makes a distinction between two types of sampling: the sample is either selected on the basis of probability or non-probability. For a sampling design to be called probable, it has to be selected using a random selection process whereby each element of the population has an equal chance of being selected. On the other hand, with non-probability sampling some elements of the population are more likely to be selected than others.[19]

The sample selection for this study was made with non-probability sampling and judgemental or purposeful sampling. The selection of such a sample depends on the subjective judgement of the researcher – the researcher only approaches those people who in her or his opinion are likely to have the required information and would be willing to share it.[20] This is also true in this study, as the researcher used her own judgement, complemented by her own experience in the field of EDRMS in selecting a sample of four Government departments based in Pretoria that have implemented EDRMS. The researcher tried to find cases where different types of systems were implemented, to find differing viewpoints not based on one system only.

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[18] Nachmias C.F & Nachmias D. 1996,181-183

[19] Bryman A. 2001,85

[20] Gorman G. E & Clayton P.2005,106

2.1.2 Qualitative research design

According to some authors[21] on research methodology in the social sciences distinguish between two paradigms:

- a positivist paradigm, which views the world as a collection of observable events and facts that can be measured and that take a quantitative approach
- an interpretivist paradigm, which takes a qualitative approach and which focuses on social constructs that are complex and always evolving, making them difficult to measure in numerical terms.

This present study is about users and how they behave towards and perceive the implementation of the EDRMS – for this reason the research method will follow the interpretivist approach.

Qualitative research is further defined as a process of enquiry that draws data from the context in which events occur, in an attempt to describe the occurrence, as a means of determining the process in which events are embedded and the perspectives of those participating in the events, using induction to derive possible explanations based on observed phenomena.[22]

Qualitative research has recently generated much interest in the study of information systems because information systems theory still needs a lot of exploratory work to reveal the major concepts and influences associated with its development and use from a socio-human perspective.[23] Qualitative methods are used in information science and records management and information system practices; the study is an overlap between these three areas of information practice and the qualitative approach is best suited to this research.

Qualitative research methods contribute favourably to the information profession. This contribution is attributed to a number of aspects. Gorman & Clayton[24] quote among others the following:

- the complexity in an information environment requires a flexible understanding of complex evolving social constructs and variability in data analysis
- qualitative research helps facilitate the use of triangulation to enrich research findings
- it is suited to the non-qualitative background of many information professionals.

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[21] Golaftsha N.2003, 597 - 607

[22] Gorman G. E & Clayton P.2005,3

[23] Williamson et al. 2000,40

[24] Gorman G. E & Clayton P.2005,14

According to Kumar[25], a study can be classified as qualitative if its purpose is primarily to describe a situation, phenomenon, problem or event; the information is gathered through the use of variables measured on nominal or ordinal scales and where an analysis is done, to establish the variation in the situation without quantifying it. He goes further to highlight the different opinions people have about the issue as one example of qualitative research.

This is true for the present study as well: the factors affecting EDRMS implementation are the qualitative aspect, because finding out about them entails describing them in detail and getting people's perceptions and views. The rationale behind using the qualitative approach can be attributed to the following key features that are usually distinct in qualitative research:

- this study seeks to understand behaviour, beliefs and how people interpret events as they relate to EDRMS implementation
- the researcher wanted to interact with the participants in order to understand the world as seen through their eyes, which is possible in qualitative research
- by using semi-structured interviews and open-ended question and observations, the researcher was able to gain a better understanding of the factors that affect implementation of EDRMS[26]

By observing the implementation of the EDRMS in its natural setting, the researcher was also a key data collection instrument.

Qualitative research is more suited to the information field, as it has the potential to improve service to users.[27] By investigating the factors affecting implementation, solutions can be sought, which can improve users' perceptions of the system and lead to increased usage.

2.1.3 Case study research

The term "case study" pertains to the fact that a limited number of units of analysis are studied intensively. The units of analysis include individuals, groups and institutions.[28] This is true of this research into critical factors affecting the implementation of EDRMS at the Presidency.

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[25] Kumar R.1996, 12

[26] Bryman A.2001,283

[27] Gorman G.E & Clayton P. 2005, 3-15

[28] Welman et al.2005,193

The entity being analysed is the Presidency, but comparisons will be made with other organisations that have performed similar implementations.

Case study research is concerned primarily with qualitative data and in the study of information systems it is the most widely used qualitative research method. It is also appropriate where there is little understanding of how and why processes or phenomena occur, where the experiences of individuals and the context of actions are critical or where theory and research are at an early, formative stages and can be usefully addressed using case studies. [29]

This study qualifies as a case study, as the study of EDRMS is at its early stages in South Africa, as it is elsewhere in the world. The study investigates the factors affecting the implementation of EDRMS – there has been lack of research emanating from this area as most of the institutions that have implemented these systems are so busy trying to make them work or trying to find a return on their investment, that there is no time for research.

The disadvantages associated with the use of case study research include difficulties in generalising research results and the subjectivity of the data collection and analysis process.[30]

The study of the Presidency is a single case and may pose challenges in that it might be unique to the Presidency's environment and difficult to generalise for other organisation. To meet this challenge, Williamson notes that a single case may also be used as a pilot study for a research project for which several cases are required, especially where the study is an exploratory study.

The Presidency will be used in the main study, but other, similar institutions will also be selected to allow for comparisons with the Presidency. These institutions will be selected to predict similar results or to produce contrasting results for predictable reasons. [31]

Gorman & Clayton[32] describe this approach as comparative case studies, because a single case study is supplemented with selective data from other cases, or two or more cases of equal value and depth are compared and contrasted.

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[29] Williamson el al. 2000, 93 -95

[30] Williamson et al. 2000,103

[31] Williamson el al. 2000,97

[32] Gorman G.E & Clayton P.2005,51

2.1.4 Data collection techniques

This research follows the triangulation principle, which in this research is defined as a method whereby the researcher confirms the consistency of findings by using several different data collection methods. Literature research, observation and unstructured interviews will be used to collect information about the study. If different methods are employed it is easy to compensate for the weaknesses that can be found in such other methods.[33] All methods used in this research are qualitative in nature.

Literature research has been used as a main data collection method for this study. Booth el al[34] recommends three types of sources when conducting literature review. These are:

- **Primary Sources** describe source material that is raw data that a researcher uses to test his working hypothesis and evidence to support his claim.
- **Secondary Sources** are research reports that build on primary data to solve research problems written for scholarly and professional audiences.
- **Tertiary Sources** are books and articles that synthesize and report on secondary sources for general readers, such as textbooks, articles in encyclopaedia and mass circulation publications.

Secondary sources have been most central in this research.

The researcher used a combination of terms to search the educational databases that are available at the Stellenbosch University library. The database that produced the most relevant references was Emerald. The researcher also used the services of the Presidency library to research relevant sources. The reference librarian searched through a number of databases for articles about EDRMS/ECM and the one that come out with more relevant references was Online Computer Library Center (OCLC). Search strategies were designed to be broad in order to capture a significant portion of representative material.

In addition to searching literature through abstracting and indexing, the researcher followed advice from Gorman & Clayton to scan footnotes in retrieved journal articles as well, to find other related publications that could have been missed during the searching of the

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[33] Williamson et al. 2000,36

[34] Booth et al.2008,68 – 82

databases.[35] New references kept on emerging throughout the research phase and the researcher was able to weigh their relevance before adding them to the report.

Some 30 potential articles were identified and each was reviewed to determine whether it met the research criteria and to determine its appropriateness for inclusion in the study. The retrieved articles were mostly of American or Canadian origin – there was only one article that discussed EDRMS implementation in South Africa.

The research proposal for this project intended to look at factors affecting EDRMS implementation in relation to the Presidency only, but while examining the initial set of articles, the researcher became aware of other research that had not originally been taken into consideration when formulating the search strategy.

Further searches through other databases revealed that the existing research on EDRMS implementations in other Government institutions in South Africa was of such a nature that the researcher considered it advisable to include items on these other institutions as well.

The methodology used by different authors in researching system implementation was also reviewed and in particular the various approaches used in studying critical factors in these articles were investigated.

Observation: In defining participant observation, Bryman[36] looks at it as a method where a researcher is immersed in a group for an extended period of time, doing fieldwork by observing behaviour, listening to what is said in conversation and by asking questions. He further observes that the participant observer will gather further data through interviews and the collection of documents

Bryman classifies participant observer roles into four categories: [37]

- complete participant – a full member of the group being studied, whose intentions are not revealed to the other members of the group.
- participant as observer – a full member of the group being studied, whose intentions are revealed to the members.
- observer as participant – the researcher is more of an observer than a participant
- complete observer – there is no interaction with the group, only observation

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[35] Gorman G.E & Clayton P.2005,74

[36] Bryman A. 2001.291

[37] Bryman A. 2001.299

According to Nachmias & Nachmias[38], the observer in a complete participant role is wholly concealed; the researcher's objectives are unknown to those being observed and he or she becomes (or remains, as in this case) a member of a group under observation.

The researcher in this study is very familiar with the environment – as a project manager for the EDRMS project at the Presidency for five years – and it was relatively easy to assume the role of a complete participant. As a project manager, the researcher was able to both observe and participate in discussions during project team and stakeholder meetings and in user training without disrupting the day-to-day, ordinary activities of the group. Being both project manager and part of the implementation and training teams, the researcher was able to study all areas of behaviours around the EDRMS implementation that would not normally have been revealed by other methods such as questionnaires and interviews. The researcher was also able to do textual analysis of E-mails between the project team members, the service provider and Radical Helpdesk Report to supplement her observations and was thereby able to overcome problems of access usually associated with participant observation. Ryman quotes Van Maanen & Kolb to emphasise the issue of access:

> *.....gaining access to most organisations is not a matter to be taken lightly, but one that involves some combination of strategic planning, hard work and dumb luck.* [39]

Reactivity was also reduced in this study, as the observation was done under everyday circumstances with the participants not being aware that research was being conducted. Their behaviours were therefore not modified by the researcher's presence.[40]

One disadvantage associated with this method is the possibility of incomplete observation and recording.[41] The researcher could not carry a pen and paper during the observations, so notes had to be taken down after observation. Bryman[42] also suggests taking mental notes in cases where it is not appropriate for the researcher to be seen taking down written notes. Nachmias & Nachmias[43] note that observations can be easily forgotten and should therefore be recorded at the earliest possible opportunity.

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[38] Nachmias C.F& Nachmias D.1996,282
[39] Bryman A. 2001,294
[40] Bryman A. 2001,294
[41] Kumar R. 1996,106
[42] Bryman A. 2001,305
[43] Nachmias C.F &Nachmias D. 1996, 292

Semi-structured interviews: Interviews are mostly seen as a technique for collecting qualitative data and are frequently used in case studies which make it suitable for this type of study.[44] In research, three types of interviews can be used:

- structured
- semi-structured, and
- unstructured.[45]

Semi-structured interviews have a standard list of questions, but allow the interviewer to follow up on leads provided by the participants for each of the questions involved.[46] It is also important to note that the list of questions may vary from one interview to the next to suit the background of the respondents. [47] Selecting semi-structured interviews rather than structured or unstructured interviews was done because the researcher wanted the flexibility that comes with this type of interview, which allows the interviewer to probe for more information and to get more perceptions and opinions about EDRMS implementation.

Both structured and unstructured interviews are used extensively in both information management and information systems, but the interviews used for this study were semi-structured and were conducted at the following government departments around Pretoria:

- The Department of Public Enterprises (DPE)
- Cooperative Governance and Traditional Affairs (CoGTA)
- The Department of Trade and industry (DTI)
- The National Energy Regulator (NERSA)

These departments were selected on the basis of having recently implemented ERRMS and because of their close proximity to the researcher, given the limited time the researcher had to conduct the research. Personnel at the head offices of the government departments were interviewed, because most EDRMS projects are rolled out in main offices before they are implemented in provincial offices – in this way the researcher was confident that she was forming a holistic image of EDRMS implementations.

The participants were selected according to these criteria: their positions in the organisation and their roles in the implementation of EDRMS. This made it easy to find the right people to

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[44] Williamson et al. 2000,223
[45] Welman et al. 2005,165
[46] Williamson et al. 2000, 225
[47] Welman et al. 2005,166

be interviewed. The interviewees were from the following positions: records managers, knowledge managers and project managers.

The interviews focused on questions that would help the researcher to gain perceptions of and insights into the respondents' experiences in the implementation of EDRMS and the factors affecting such implementations.

The literature research and the background documentation about the project provided a basis for designing the questionnaire. The questions for the interview were aimed at finding out more about the history of the implementation, factors related to the implementation and its effects.

The questions were based on the researcher's implementation experiences as well as on the literature and project documentation studied. Kumar[48] suggests the following guidelines for framing the questions to be asked during the interview:

- use simple language
- avoid ambiguous questions
- avoid double-barrel questions
- avoid leading questions, and
- avoid questions based on presumptions.

The interviewees were contacted telephonically and by E-mail to invite them to participate in the research, of which the purpose was explained. The participants were then told that a formal appointment with the date and time would be confirmed by E-mail. Once the organisations had agreed to the interview and time, the persons were interviewed following the methodology suggested by Gordon & Clayton[49]:

- an introduction
- completion of ethics paperwork
- obtaining permission to take notes and an audio recording
- asking open-ended questions
- allowing interviewees the opportunity to raise any matters that could have been overlooked, and
- concluding remarks and thanks.

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[48] Kumar R. 1996,121

[49] Gorman G.E & Clayton P.2005,204

Babbie & Mouton[50] extend these stages to include those that follow the actual interview; namely:

- transcribing the interviews
- analysing the interviews in terms of the aims of the study
- checking the reliability and validity of the material, and
- reporting.

The researcher first explained the purpose of the research and why it was important to sensitise the participants to the kind of information to be collected. The researcher then chose between note-taking or tape-recording, to make sure that the notes could be transcribed immediately after the interviews into a complete record of what was said. The researcher had first arranged the interviews to take place as close to each other as possible in terms of dates – that proved to be challenging, as the people's schedules seldom allowed the proposed times.

The interviews took place in individual offices where there were no distractions. At the beginning of the interview it was agreed that phone calls would be diverted. It was also observed by Gorman & Clayton that most senior staff usually prefer to be interviewed in their offices, as these normally provide a quiet, appropriate venue. [51]

Each interviewee's consent to participate and permission to audio-tape the interviews were discussed before signing the consent form. The interview guide with set questions was used, although the questions were not tightly adhered to. The questions were tested by confirming or challenging their validity with the participants. Most questions were open-ended to give the researcher the opportunity to probe for more answers and to obtain clarity on the statements. Since interviews were one-on-one, there were no interruptions. Non-verbal and emotional components such as body language were also noted during the interviews.

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[50] Babbie E & Mouton J.2003,290

[51] Gorman G.E & Clayton P. 2005,207

2.2 Qualitative data analysis

Data analysis is the process of bringing order, structure and meaning to the mass of collected data. For this study, the same questions that guided the data gathering process were also used for the preliminary analysis. Its primary purpose is to search for general statements about relationships among categories of data. Gorman and Clayton[52] suggest that data analysis should be a continuous and interactive process throughout the research process; data should be analysed as it is collected.[53] It is therefore quite possible for some hypotheses to be discarded, others refined, and new ones formulated as the process advances.

Nachmias & Nachmias [54]cite Miles & Huberman's approach to qualitative data analysis, which suggests that data analysis follows the three parallel courses mentioned below and this method was applied in analysing the interviews:

Data reduction is a process that includes selecting, focusing, simplifying, abstracting and transforming the data. Preliminary data analysis also takes place at this stage, as the researcher aims to reduce the data to meaningful and manageable portions, analysing it while sorting it and discarding some data. Putting data into categories also takes place during this preliminary analysis.

Data display is where complex data is summarised by using display methods such as charts, graphs and other illustrations,

Conclusion: is the final process where the data is verified and inferences are drawn from.

All three were applied in analysing the interviews.

2.3 Trustworthiness (reliability)

While trustworthiness and validity are important criteria in establishing and assessing the quality of research for the quantitative researcher, Bryman[55] suggests the following four criteria when judging the trustworthiness or reliability of qualitative research. These criteria are:

- credibility

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[52] Gorman G.E & Clayton P.2005,204 -207
[53] Nachmias C.F & Nachmias D. 1996, 292
[54] Nachmias C.F & Nachmias D. 1996, 292
[55] Bryman A.2001,273 -274

- transferability
- dependability, and
- conformability.

Credibility involves ensuring that the research is carried out according to the canons of good practice and verified by submitting research findings to other members of the particular social environment that was being investigated, to confirm that the investigator had correctly understood that environment.

The following techniques were applied to ensure credibility of the study: triangulation, which entails using more than one method or data source in studying social phenomena. This study used a combination of data collection methods, namely observation, semi-structured interviews and literature studies, which produced the three different viewpoints from which the researcher could judge the research and improve its reliability.

The data derived from the three methods was in agreement and the researcher is confident about the credibility of these findings. A "respondent validation" technique was also applied in this study, where the respondents were consulted while the report was being written, to confirm its findings and to ensure that they agreed with the views of the participants. "Prolonged engagement" also occurred, as the researcher had long prior exposure to the field being studied.

Transferability is the ability of the study to be applied to other contexts. To ensure transferability the researcher used purposive sampling rather than random sampling. Purposive sampling seeks to maximise information in a particular context by selecting locations and informants that differ from one another.[56] Although the study seeks to investigate critical factors affecting EDRMS implementation as they occur in the Presidency, it also looked at four other government organisations that have implemented EDRMS. The study is therefore equally applicable to other Government institutions implementing an EDRMS or planning to do so.

Dependability entails ensuring that complete records are kept at all phases of the research process.

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[56] Babbie E & Mouton J.2003,277

Conformability (objectivity) addresses the question of whether the researcher has manifestly allowed personal values and a theoretical bias to slant the conduct of the research and the findings deriving from it in a particular direction. The researcher submitted certain portions of the text to be read and interpreted by the interviewees.

2.4 Limitations of the study

EDRMS is still in its infancy in South Africa and especially in Government; as a result only limited literature has appeared on the South African Government context of EDRMS. Those institutions that have implemented an EDRMS are so involved in implementing the system and making it work that writing about their experiences has been the least of their priorities.

It is often a challenge to get Government departments to talk about projects where millions of rands have been spent, apparently due to the fear or embarrassment of talking about a project where the Return on Investment (ROI) has not been realised. Some may also not be willing to admit to the fact that the project or its implementation has been a failure, or share the factors affecting a failed implementation.

Because of the demand for suitable personnel in the professional field, one also finds that a project team initially involved in implementing a system has since left the institution, leaving one to rely on information provided by its successor.

The views of the participant researcher were also considered as a limitation. The researcher was very cautious not to use the views on their own or as a primary research method.

2.5 Conclusion

The chapter gave an overview of the methods that were followed in collecting data for the study as well as of the process applied to analysing the collected data. The literature on research methodology was studied; the methods that support the study were identified as were the research methods that were used. The reliability and authenticity of the study were validated using different methodologies and limitations associated with the study were outlined.

Chapter Three
Public Sector Organisations

3. Introduction

In this chapter different types of organisations will be studied and the elements that make up an organisation and how these relate to EDRMS implementation will be explained. The last part of the chapter reviews the South African public sector in order to position the Presidency within it. The concept of an organisation is defined before we further look at the different components of this chapter.

3.1 Different types of organisations

Organisations are defined by Gibson et al[57] as units that enable society to pursue accomplishments that cannot be achieved by individuals acting alone. He also propounds the systems theory view stating that an organisation is only one element among a number of elements interacting interdependently**.** Systems theory suggests that organisations are social entities existing as parts of a larger environment and that they function to satisfy the demands of those environments For example, in a Government institution the public servants, (professional and administrative), equipment and supplies, are part of an entity that is supposed to respond to the service delivery requirements of the public and other organs of State.

The key elements in any organisation are its people, structures, operational procedures, politics and culture. With the rise in technological innovations, most recent articles and books have included information technology (IT) as a key element in many organisations.

Laudon & Laudon[58] identifies features of organisations; it differentiates between what is called common features and unique features. Common features are identified as formal structure, routines, politics and culture, while unique features are identified as organisational type environments, goals, power constituencies, functions, leadership, tasks, and technology.

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[57] Gibson et al.2006, 21 - 26

[58] Laudon K. B & Laudon J. P. 2006, 5 - 14

Phillips[59]also adopts a similar dimension when looking at E-government. He supports Laudon & Laudon but introduces a people and culture dimension and also adds a component of alignment, knowledge and governance.

The Knowledge Management Reference Model by Botha & Fouche gives a holistic view of the relationship between the essential factors in the organisation. In this study the KM Reference Model will be adjusted to study information systems with special reference to EDRMS.

The authors' approach look at organisational culture, organisational structure, knowledge based processes and routines and collaborative information and communication technologies as interrelated factors to be aligned by the leadership. [60]

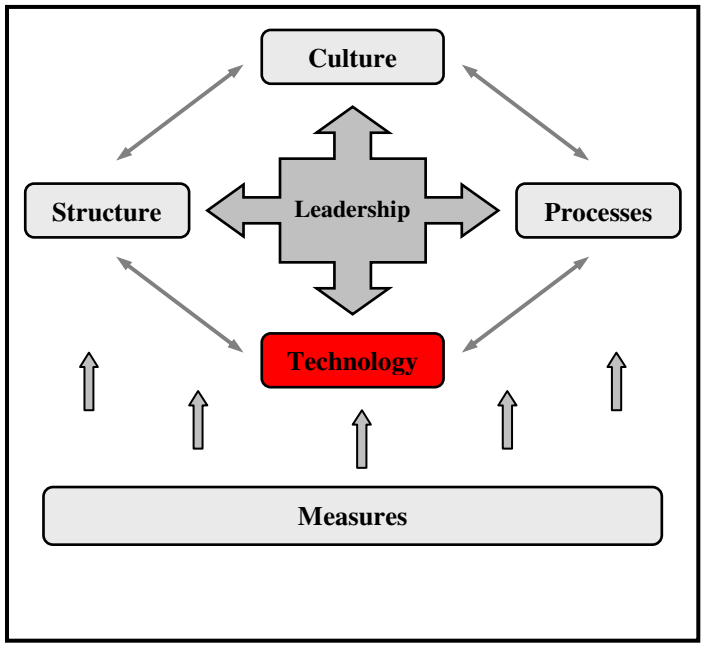

Figure 3.1 – *(KMRM) KM Reference Model*

Source: *Botha, D. F& Fouche, B.2002*

[59] Phillips P.2003,182

[60] Botha D.F & Fouche B.2002

3.1.1 Leadership

In government, the leadership for EDRMS projects is provided by top and senior management. There is a wide belief that involvement and sponsorship of the leadership are critical for the success of EDRMS project. Leadership need to facilitate the implementation of the project and the buy-in of users in their directorates. EDRMS projects are more successful if there are champions among the management who can relate their value to the organisation's mission and vision.

Support for the EDRMS initiative should not only be sought from senior management – all levels of management, whether direct supervisors or mid-level managers, should take part in the change they want to see in their organisation. In support of this view, Botha & Fouche argue that knowledge leadership is an example of the management of change.[61] This is also true with EDRMS and leadership. EDRMS projects rarely succeed without the involvement of the leadership, who must understand the system, the needs of their departments, how the system impacts on the organisation as a whole and their units' processes in particular.

Addressing leadership in a dot.com era, Phillips[62] sums this up by also observing that agendas for change have become an organisation-wide agenda, not just limited to management as suggested by many authors in the subject of leadership and system implementation. The nature of leadership differs from one organisation to another; some organisations may be more democratic or authoritarian than others and this will have an influence on how change such as an EDRMS implementation will be perceived in an organisation.

3.1.2 Organisational culture

This study identifies a relationship between organisational cultures, structures and processes and argues that the processes and routines of an organisation are a reflection of its culture. Organisational culture can be described as the pattern of development reflected in a society's knowledge system, its ideology, values, laws, and day-to-day rituals. Shared values, shared

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[61] Botha D.F & Fouche B.2002

[62] Phillips P.2003,183

beliefs, shared meaning, shared understanding and shared interpretation are all different ways of describing culture.[63]

Organizational culture has a great impact on how people welcome and handle change because organisational change implies changing culture. It has been observed by different authors that many projects involving almost similar information technologies in different countries falter because their designs are not sufficiently tailored to the country's history and industrial traditions.

Problems that arise are not attributed to the lack of technological development in a particular country, but rather to the cultural differences between designers of technology and its recipients.[64] Organisational culture is a powerful restraint on change, especially technological change. Any technological change that threatens commonly-held cultural assumptions usually meets a great deal of resistance.[65] This is so because parts of an organisation's culture can always be found embedded in its information systems.

Lack of understanding of an organisational culture in the public sector has been a great concern, because research on organisational culture indicates that it is central to the change process and to the attainment of strategic objectives.[66] Public organisations also have a way of emphasising the values of a bureaucratic or hierarchical organisational culture.

One recommendation, as put forward by CS Holding's[67] presentation to the Presidency, that regulatory intervention may be preferable to a policy approach in environments where there is a history of doing it alone or where there are challenges to the creation of a culture of co-ordination. The implementation of technology and service delivery improvement is very much a cultural issue in a public sector. There should be sufficient understanding of how the implementation of an electronic system would impact on the cultural issues that are embedded in work processes and staff procedures.

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63 Morgan G.1998, 111-113

64 Phillips P. 2003,184

65 Laudon K.B & Laudon J.P. 2006, 76

66 Parker R & Bradley L.2000,125 – 41

67 CS Holdings: Change Management presentation to The Presidency, SITA and IA Systems .June 2004.

3.1.3 Structures

In categorising organisations, a number of authors have applied Mintzberg's classification[68] which categorises organisations into six different types:

- entrepreneurial
- machine
- professional
- diversified
- innovative, and
- missionary

In categorising organisations, Mintzberg follows a structural view of an organisation. In his book, Have[69] also follows the same model and stresses the importance of identifying coordinating mechanisms that determine the structure of the organisation and how power is divided across the organisation. This can be depicted in the table below which has been borrowed from Have. Mintzberg categorised organisational structures into five clusters, depending on their prime coordinating mechanism, the key level within the organisation and the type of decentralization.

Configuration	Prime coordinating mechanism	Key part of organisation	Type of decentralisation
Entrepreneurial organisations	Direct supervision	Strategic top	Vertical and horizontal centralisation
Machine organisations	Standardisation of work	Technostructure	Limited horizontal decentralisation
Professional organisation	Standardisation of skills	Operating core	Horizontal decentralisation
Diversified organisation	Standardisation of output	Middle management	Limited vertical decentralisation
Innovative organisation	Mutual adjustment	Support staff	Selected decentralisation

[68] Laudon K B &Loudon J P. 2006, 89

[69] Have et al.2003,142

Missionary organisation	Standardisation of norms	Ideology	Decentralisation

Table 3.1: Structural configuration of organisations according to Mintzberg

Source: *Have, S et al. 2003, 142*

Most government departments tend to depict features of machine bureaucracies as this structural configuration is based on standardisation of work processes. For example, many duties of the organization are divided into departments and there is a clearly defined hierarchy. In government departments, one also finds that clear policies and regulations are followed and most are regulated by the Department of Public Service and Administration.

According to Laudon & Laudon there is a strong relationship between the types of organisation, the type of systems implemented and the nature of problems with the information system implemented.[70]

Each unit within a department develops its own information system operating in silos, leading to parallel management control systems. Typical systems that are found in Government departments will be a Human Resources system, a Supply Chain Management system, and Finance systems. More often than not, one will not find integration between these systems. It is also common to find mini functional-based system within each unit or different directorates that do not talk to each other. Each directorate within a certain department competes with the others for scarce funding.

Features of professional organisations are also found in some Government departments. With this type of organisation there is clear evidence of standardization of professional skills rather than output.

Flattening of hierarchies due to technological advancement has been quoted by several authors. By introducing technology in an organisation, the distribution of information is broadened to empower lower-level employees and increase management efficiency.[71] An example of a correspondence system which is usually implemented in Government departments as part of EDRMS initiatives ensures that entry and middle level employees are able to respond to public queries with little supervision from their managers. Based on the

[70] Laudon K.B & Laudon J.P. 2006,76-77

[71] Laudon K.B &Loudon J.P. 2006, 83

action history of the document, one is able to check from the system how far into the process the query has progressed and is able to respond to the public.

Laudon & Laudon also notes that technology changes have enabled managers to manage more employees at the same time even if the employees are spread over provincial departments, as is usually the case with government departments.

With E-business transformation projects on the increase, the organisation needs to be prepared to replace traditional bureaucratic, hierarchical structures with flexible, decentralized, team-and alliance based structures.[72]

3.1.4 Processes and routines

Routines are simply put by Laudon & Laudon[73] as precise rules, procedures, and practices that have been developed to cope with virtually all expected situations. Business processes refer to the set of logically related tasks and behaviours that organisations develop over time to produce specific business results and the unique manner in which these activities are organized and coordinated.

According to Botha & Fouche[74] organisational processes are not independent of structure and culture. This is true of the implementation of EDRMS, which causes existing processes and procedures to be altered drastically, thereby affecting existing culture. The job functions of various existing staff members may be affected by the EDRMS, which could result in amendments to terms of employment, transfers or even redundancies.

The review of current processes and procedures that goes with the implementation of the EDRMS requires that leadership gets involved in designing and signing-off new processes.

From the legal and regulatory perspective as proposed in the CS Holdings presentation, EDRMS is merely a tool to support Department's internal operations and it automatically falls within existing processes, procedures and governance. CS Holdings caution that some officials within the department who bear responsibility for existing processes and procedures, also known as Process Owners, could perceive EDRMS as an IT issue. This may cause those responsible for design and implementation of an EDRMS to depart from existing processes

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[72] Phillips P. 2003,182

[73] Laudon K.B & Laudon J.P. 2006, G2 and G11

[74] Botha, D.F& Fouche B. 2002

and procedures. Furthermore, CS holdings warn that this could also cause disparities between the same process and procedure when performed in a physical, paper-based environment.[75]

Re-engineering of processes should be done to ensure an alignment between the business objectives and the actual service delivery. Most governmental processes involve the use of information in one way or another. This is why an analysis of the business processes is necessary to enable the successful implementation of EDRMS in Government.

When a governmental body envisages the automation of its business process, this must be done before processes can be designed into the EDRMS. These processes should be driven by leadership to avoid the automation of ineffective processes.

On routines, Phillips[76] quotes Venkatran's premise that IT potential benefits are directly related to the degree of change of organisational routines.

3.1.5 Technology

Technology refers mainly, but not exclusively, to the role of information and communication technologies.[77] A well-accepted view in the field is that the implementation of EDRMS is a strategic business decision, not just an implementation of an IT system. Sharing this view, Botha & Fouche emphasize the need to diagnose and manage the social context of the workplace prior to implementing technologies. They see technology as an enabler once the processes have been mapped to support human needs.[78] Managers also need to understand how information systems can change the social and professional life of the organisation and take that into consideration when designing successful systems.

Enterprise applications such as EDRMS are designed to support organisation-wide process coordination and integration. These systems present a set of functionalities and business processes to enhance the performance of the organisation as a whole.[79] The Presidency's ICT policy[80] states that organisations are increasing investment to manage content as an enterprise asset that can be used across multiple business units or segments. The majority of the information a company possesses is unstructured data residing in word-processing documents, presentations, rich media files, spreadsheets and other file formats. Companies

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[75] CS Holdings. June 2004
[76] Phillips P. 2003, 182
[77] Botha D.F& Fouche B.2002
[78] Botha D.F & Fouche B. 2002
[79] Laudon K.B & Laudon J.P. 2006
[80] ICT Policy: The Presidency. 2009

must make this content available to workers and applications across the organisation to automate business processes, increase efficiency, reduce costs and repetitiveness, make employees more effective and gain competitive advantages. To achieve these benefits, companies will shift their preferences from best-of-breed products to scalable ECM suites, which integrate various document and content-related technologies. With this shift to ECM most companies have seen some improvements in the organisation's operational practises, business processes.

Research on project implementation failures demonstrate that the most common reason for the failure of large projects to reach their objectives is not the failure of technology, but organisational and political resistance to chance.[81]

3.1.6 Measures

An information survey investigates the current situation on how well is the alignment with the business needs and can provide an understanding of why the organisation needs to support operational objectives, why organisations need to support their business objectives and what processes and information flows are currently in operation.

Analyzing the current state of records management is critical if the organisation wants to implement an EDRMS. One form of measurement procedures that can be employed is identifying the baseline for the information maturity and infrastructure maturity of the organisation. This normally takes place before the implementation of the system to measure if the existing infrastructure will be able to sustain the new technology.

When IT implementations fail, it has serious implications for the record keeping and records management practices of Government bodies. This is a great concern to the National Archives that has to protect the collective memory of the nation for centuries to come. As a result, the National Archives requires that Government bodies plan their technology implementations properly and access the impact that it would have on their record-keeping and records management practices before they embark on such implementations.[82]

Another form of monitoring and evaluation takes place during post implementation stage is benefit realisation measure. This can be done by listing the benefits and assigning measures

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[81] Laudon K.B & Laudon J.P. 2006,85

[82] Managing electronic records in governmental bodies: policy, principles and requirements. April 2006

and targets to the benefits. If the benefits are not realised one will have to identify the cause and consider possible ways of remedying the situation.

3.2 Public sector organisations

Public sector organisations are owned and controlled by the Government. They basically provide public services which are often free. The structure of the South African Government consists of the Executive, Judiciary and Legislature. At the executive level is the President, the Deputy President, Cabinet Ministers at national level, and the Premiers and Members of the Executive Councils (MECs) at provincial level. It also includes government departments and civil servants. [83]

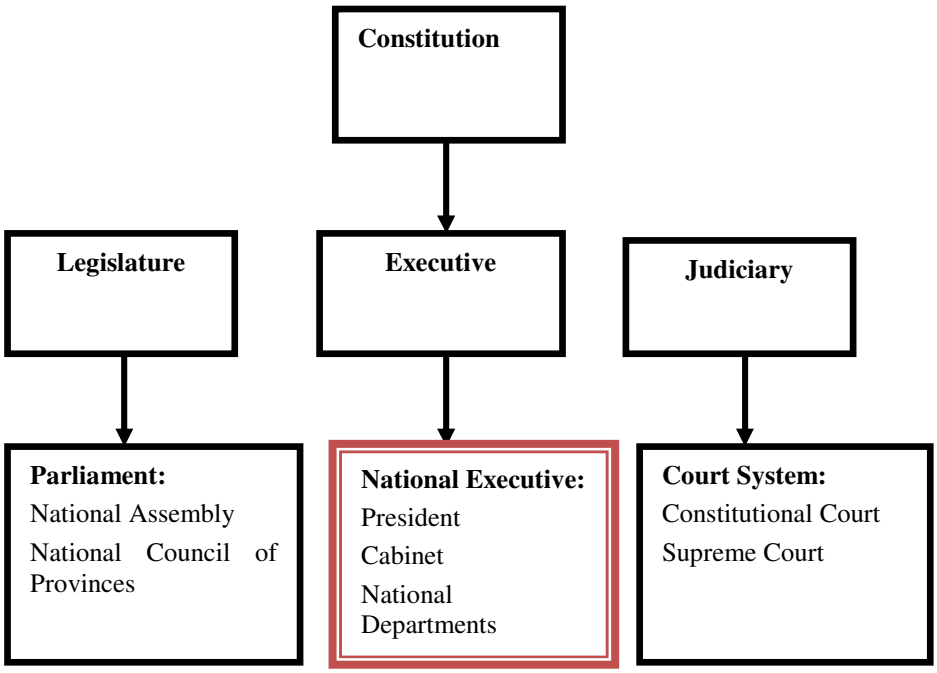

Figure 3.2: The Structure of South African Government

Source: Adapted from *Cape Gateway*, (no date)

The President allocates specific responsibilities known as portfolios to each Minister to supervise.

[83] Cape Gateway. http://www.capegateway.gov.za/eng/your_gov/595 viewed on 04/05 /2010

A Government body means any legislative, executive, judicial or administrative organ of State (including a statutory body) at the national level of government;[84] The organisation under study falls within national departments. The Presidency structure can be re presented as follows:

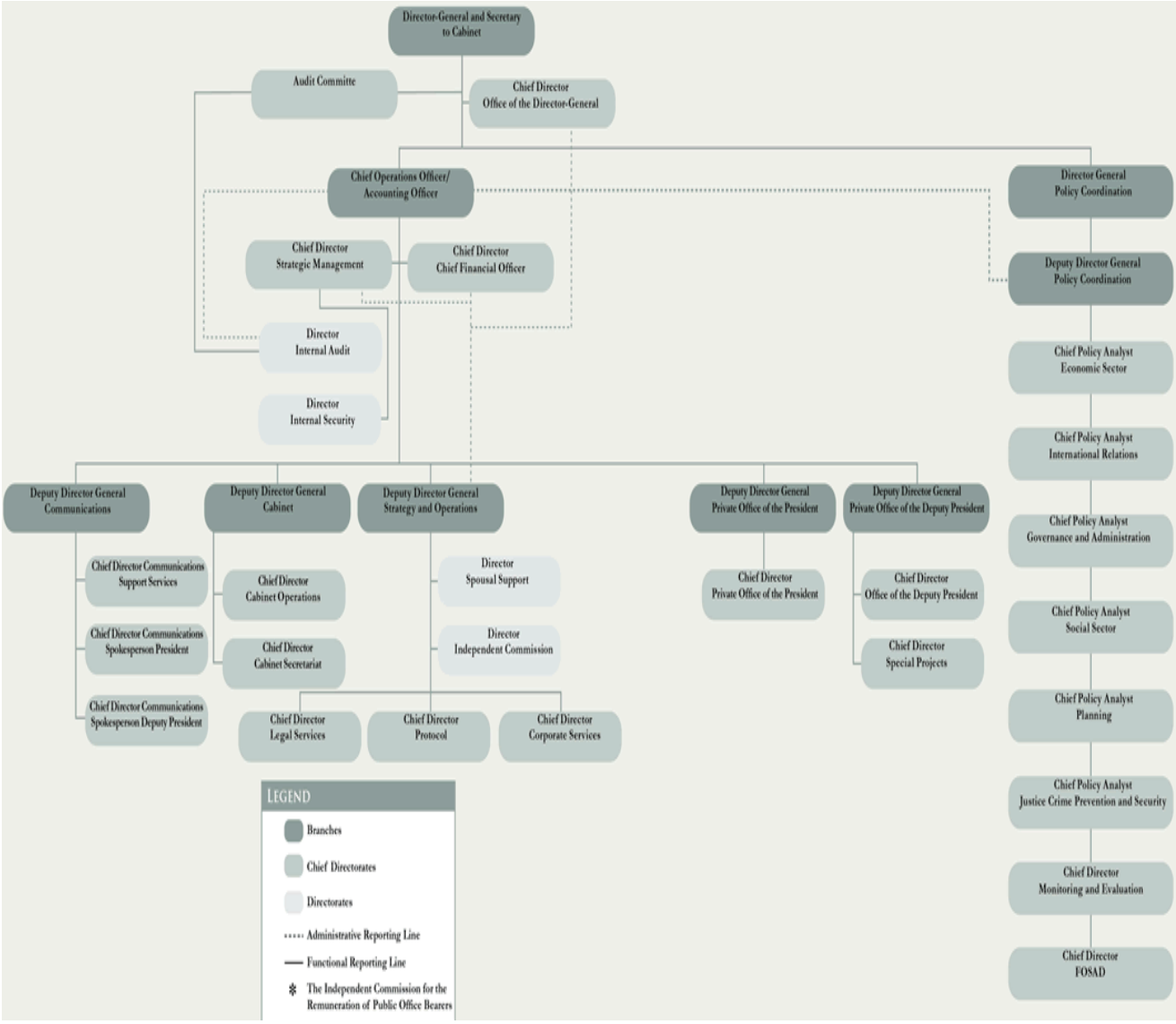

Figure 3.3: The Presidency Organogram

Source: The Presidency Annual Report 2008 – 2009

[84] NARSA Act. http://www.dac.gov.za/acts/a43-96.pdf viewed on 15 October 2009

The high-level representation of the functional perspective of the Presidency is provided in a value chain in Appendix C, as indicating the following:

- core business processes, and
- supporting (corporate) business processes.

One way of highlighting the nature of government is to try to make a distinction between Private Sector and Public Sector organisations. Both sectors are concerned with value creation, but where the private sector is interested in generating a return on the investments of private shareholders, the public sector is concerned with creating value that focuses on creating outcomes that improve the social and economic circumstances of citizens by utilizing tax funds from taxpayers.[85]

The core responsibilities of a Government, according to Accenture, is to deliver high-quality, relevant services that meet the needs, not only of citizens, but also of communities, businesses and voluntary organisations.[86] Most government organisations around the world have embraced new technologies to achieve high-quality service delivery. They are well aware that such service delivery requires changes to organisational structures, technologies and the way work is performed. This is also supported in one of the eleven principles that define high performance government organisations: "Help increase and leverage the potential of information technology", which attests to the fact that technology is a critical enabler of high-performance government organisations. It can improve and transform the internal operations of the government, aid in workforce change, bring governments and citizens together and enable plurality in public service provision.[87]

Transforming the internal operations of the Government is the main focus with enterprise systems such as the EDRMS. Enterprise systems, if properly harnessed, can lead to high performance in terms of service delivery, and development and reconfiguration of critical business processes.[88]

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[85] Parson G & Goodman J. 2008

[86] The Public Sector Value Model for Government. http://www.accenture.com/Countries/Canada/Services/TheGovernment.htm viewed on 04/05/2010

[87] Parson G & Goodman J. 2008

[88] Hill D. C & Harris J. G. *Using enterprise systems to gain uncommon competitive advantage*. http://www.accenture.com viewed on 04/05/2010

Governmental bodies are required by NARSA[89] to implement and maintain Integrated Document and Records Management Systems that provide the following records management functionality as a minimum:

- managing a functional subject file plan according to which records are filed
- managing E-mails as records
- managing web-sites as record;
- maintaining the relationships between records and files, and between file series and the file plan
- identifying records that are due for disposal and managing the disposal process
- associating the contextual and structural data within a document
- constructing and managing audit trails
- managing record version control
- managing the integrity and reliability of records that have been declared as such, and
- managing records in all formats in an integrated manner**.**

Government envisages a society where information is managed as a strategic resource, a culture of sharing and re-using of information exists and where the public has access to quality information. This is only possible if Government bodies capture accurate and reliable records and if they manage their records in an integrated manner.[90] This could be through the use of EDRMS. The challenge is that many Government bodies have no capacity to implement fully automated Integrated Document and Records Management Systems.

3.3 Conclusion

The chapter highlighted key elements in an organisation. Six key factors were discussed, relating to leadership, organisational culture, structures, processes and routines, technology and measures. All six factors were discussed in relation with EDRMS implementation.

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[89] Managing electronic records in Government bodies: policy, principles and requirements NARSA http://www.national.archives.gov.za/rms/best_practice.htm viewed on 04/05 2010

[90] Managing electronic records in Government bodies: policy, principles and requirements NARSA http://www.national.archives.gov.za/rms/best_practice.htm viewed on 04/05 2010

The chapter demonstrated the six elements that have an effect in the implementation of the EDRMS and which should be carefully considered. Different types of organisations/structures were discussed with the public sector as the focus. In the next chapter, ERRMS literature is studied in depth.

Chapter Four
Literature Study on EDRMS

4. Introduction

In this chapter the literature on EDRMS implementation is reviewed. The chapter starts by categorising information systems with the aim of positioning EDRMS and goes further to make a distinction between Records Management Systems and Document Management Systems. EDRMS is then discussed in depth, focusing on its drivers, benefits, measures for success and key success factors. In discussing EDRMS business drivers, different case studies were cited.

The chapter will also refer to the concepts Enterprise Content Management (ECM) and Enterprise Resource Planning (ERP) and give a rationale for focusing on the EDRMS rather than on other types of enterprise systems. The findings from this literature study will play an essential role in supporting or opposing the findings from this study.

4.1 Information systems

The study of information systems is a multidisciplinary field and the literature that relates to it is very wide. This literature study will not make an attempt to generalise on information systems but will single out EDRMS as one form of information system.

A number of authors on information systems have studied various aspects relating to the information systems discipline and most studies have taken a technological approach in studying information systems. Laudon & Laudon[91] highlight two disciplines that contribute to the problems, issues and solutions in the study of information systems. The study of information systems deals with issues and insights contributed from technical and behavioural disciplines. In the past, the emphasis was more on the technological approach but the behavioural approach has also started to gain popularity. This study will focus on the behavioural approach.

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[91] Laudon K.B & Laudon J.P. 2006, 26

It is important to explore different definitions of information systems: an information system is generally defined as a number of interrelated components working together to collect, process, store and disseminate information to support decision-making, coordination, control, analysis and visualisation in an organisation.[92] Van Rooyen[93] views an information system as composed of three sub-systems namely hardware, software and otherware. The "otherware" subsystem as referred to by the author refers to the people in the organisation using information systems. The latter definition puts more emphasis on the behavioural aspect of information systems.

Information systems also denote any type of wide combination of computer hardware, communication technology and software designed to handle information related to one or more business processes. It serves to coordinate the work of many different organisational functions, from back-office administration support to a company's strategic management tools.[94]

Information systems form the basis for conducting business today. In many businesses it becomes almost impossible to compete at a national and at a global level without the use of information systems. Successful organisations need information systems for keeping track of authentic evidence of business activity. This evidence of business transactions is mainly contained in both physical and electronic records.

Laudon & Laudon [95]divide information systems into three dimensions:

- organisations
- management
- technology

Figure 4.1 illustrates how the three dimensions work together to create systems.

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[92] Laudon K.B & Laudon J.P. 2006, 46

[93] Van Rooyen E.2008

[94] Yeo K.T. 2002, 241

[95] Laudon K.B & Laudon J.P. 2006, 20

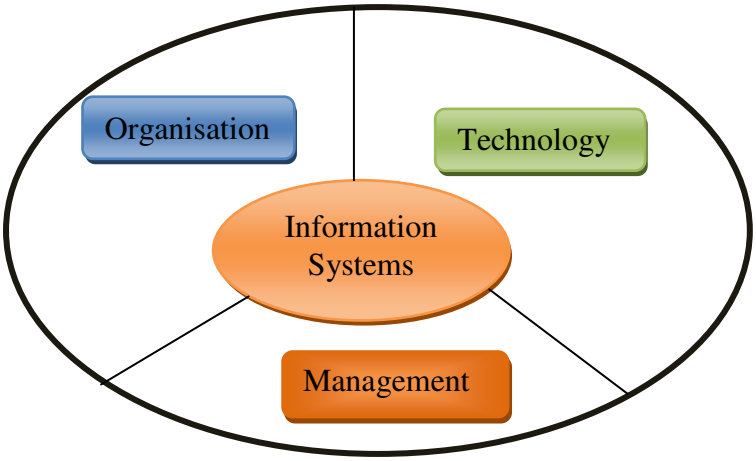

Figure 4.1 Information Systems dimensions

Source: Laudon & Laudon.2004, 20

Organization: Information systems are a part of organizations. Information systems will have imbedded within them the culture, people, structure, business proceses and politics of an organization.

Management: Information systems supply tools and information needed by managers to allocate, coordinate and monitor their work, make decisions, create new products and services and make long- range strategic decisions.

Technology: Management uses information systems technology (hardware, software, storage and telecommunications) to carry out their functions.[96]

4.1.1 Types of information systems

It is impossible to talk about EDRMS without looking at different categories of information systems that can be found in organisations.

Laudon &Laudon propose four major types of information systems:

- executive support systems (ESS) at strategic level
- management information systems (MIS)

[96] Laudon K.B & Laudon J.P. 2006, 20-24

- decision-support systems (DSS) at management level, and
- transaction processing systems (TPS) at operational level.[97]

ESS have been defined as computer-based systems that provide top managers with easy access to internal and external information, which is relevant to strategic decision making and other executive responsibilities.

The terms "executive support systems" (ESS) and "executive information systems" (EIS) are often used interchangeably, although executive support system refers to a system with a broader set of capabilities.[98] In the same vein, Laudon & Laudon[99] defines ESS as systems that help senior managers to make decisions and are designed to incorporate data about external events. Management Information Systems (MIS) on the other hand provide managers with the reports and online access to the organisation's current performance and historical records. MIS are oriented exclusively to internal, not environmental or external events. Adeoti-Adekeye[100] also rightly observes that MIS provide information to support operations, management and decision-making functions in an organisation.

TPS is a type of information system that serves the operational level of an organisation. Its features include processing transactions to ensure that daily business routines are performed. TPS are viewed as major producers of information required by the other three systems, which produce information for yet other systems. [101] One example of TPS is a payroll system like PERSAL, used by most Government departments. Enterprise application consists of

- enterprise systems
- supply chain management systems
- customer relationship management systems, and
- knowledge management systems.

Enterprise applications integrate a related set of functions and business processes to enhance the performance of the organisation as a whole. Knowledge Management systems include enterprise wide systems for managing and distributing documents, graphics, and other digital knowledge objects, systems for creating corporate knowledge directories of employees with

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[97] Laudon K.B & Laudon J.P. 2006, 41 - 43
[98] Nord J.H & Nord G.D.1995, 24 -28
[99] Laudon K.C & Laudon J.2006,44 - 47
[100] Adeoti-Adekeye W.B.1997, 318 -327
[101] Laudon K.C & Laudon J.2006,43

special areas of expertise, office systems for distributing knowledge and information, and knowledge work systems to facilitate knowledge creation.[102]

Our research focus is on EDRMS, which falls under the Knowledge Management system category. The following section will make a distinction between Records Management Systems and Document Management Systems.

4.2 Records and documents

Making a distinction between the two concepts "document" and a "records" is crucial in order to understand their management. The ISO Bulletin 15489: Information and documentation – Records management – Part 1: General and Part 2: Guidelines[103], defines a document as

> *recorded information, an object which can be treated as a unit and a record of information created, received, and maintained as evidence and information by an organisation or person, in pursuance of a legal obligation or a business transaction. Documents provide evidence of business transactions and can exist in any format*.

A similar definition of a record is clearly reflected in the National Archives and Records Service Act definition[104], which defines a record as

> *recorded information regardless of form or medium and which serves as evidence of a transaction, preserved for the evidential information it contains*

The National Archives and Records Services Act definition has been the one that has been adopted and widely accepted in South Africa. The statement "regardless of form or medium" qualifies this definition to be all-encompassing as it also takes into consideration records in electronic format.

However, it is worth exploring other variations that exist in the literature when attempting to define records and documents. The publication IT/NET insight distinguishes between a document and a record in terms of whether it can be changed or not. The publication observes that a document is a living piece of communication that can be changed or revised. A record

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[102] Laudon K.C & Laudon J.2006, 60-61

[103] Information & Documentation on Records Management Guidelines , ISO 15489

[104] NARSA Act

on the other hand gives evidence of what has already occurred, cannot be revised or altered and should be controlled throughout its life cycle. [105]

The Documents and Records Management White Paper[106] definition focuses on both structure and form:

> *A document, whether in electronic form or paper, is a basic communication device in what is considered an unstructured form (as opposed to structured data records), which in some cases can be embedded within different electronic documents that are used in most organisations.*

The paper goes further to explain that a record has evidential value as it gives evidence to an organisation's functions, policies, decisions, procedures, operations or other activities of a government agency or corporation.

Strong[107] also draws a distinction between a record and a document by stating that documents are created in conjunction with the daily tasks of the organisation to record and convey information. They may have transitory, collaborative, or referential value to the organisation. On the other hand, records are created and retained to meet operational and legal requirements by accurately recording a business event.

4.2.1 Records and documents management

Document and records management is one of the growing disciplines in the area of information management. Documents management and records management has been used by many as an interchangeable or joint term. The terminology used in the field of documents and records management is usually confusing because this is still an evolving field and only starting to attract the interest of many businesses today.

It is therefore important that we make a distinction between the two and also explain how they interrelate.

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[105] IT/NET Insight, September 2003, 5

[106] Emery P.2003

[107] Strong K.V.1999,18-27

Records Management is defined by National Archives and Records Services of South Africa as a process of ensuring the proper creation, maintenance, use and disposal of records to achieve efficient, transparent and accountable governance.[108]

The ICA[109] concur with the National Archives definition by emphasising that the above should be done in accordance with professional and international standards of practice, while the Australian Standard[110] brings in a business angle by defining records management as

> *a discipline and organisational function of managing records to meet operational business needs, accountability requirements and community operations*.

In defining records management, IT/NET attempts to make a distinction between document management and records management. IT/NET's definition emphasise the concept of a document lifecycle and states that document management is about managing a single item, the first part of the life cycle, where records management manages the entire life cycle.
A much more recent article published by Gartner on MarketScope for Records Management notes that records management involves managing document retention and preservation, and reducing the risk of lost content. It goes on to state that a good records management system includes people, processes and technology.[111] The following section will discuss differences between Electronic Document Management Systems and Records Management Systems.

4.3 Electronic Document Management System (EDMS) and Electronic Records Management Systems (ERMS)

EDMS and ERMS are types of computer systems that are used for the management of information. The Framework for Integration of Electronic Document Management Systems and Electronic Records Management Systems defines EDMS as the management of electronic documents contained in an IT system, using computer equipment and software to manage, control, locate, and retrieve information in the electronic system. On the other hand

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[108] What is records management? http://www.national.archives.gov.za/rms/best_practice.htm#records_management viewed on 05/05/2010

[109]ICA, Principles and Functional requirements for Records in Electronic Office Environments, Draft, February 26, 2008

[110] Australian Standard, AS ISO 15489 –Records Management http://www.archives.sa.gov.au/files/management_ARM_ISO15489.pdf viewed on 05/05/2010

[111] Chin K. 2008.MarketScope for Records Management, *Gartner*

ERMS are defined as the electronic management of electronic and non-electronic records contained in an IT system using computer equipment and software according to accepted principles and practices of records management.[112]

Singh *et al*[113] use a similar definition and also view ERMS as an automated records management system that enable organisations to manage both their paper and electronic records. The ERMS integrates with common office word-processing, scanning, and E-mail management applications. It is an electronic tool that enables organisations to register, capture, use, search, retrieve, modify, maintain, dispose, and archive their corporate and business records. Gunnlaugsdottir [114]captures a document life cycle view in her definition by stating that ERMS are designed to capture and manage records in any format according to the organisation's record-keeping principles. They are designed to manage records from the time they are created or appear until they are disposed of. EDMS is defined by Raynes[115] as a computerised system that facilitates the creation, capture, organisation, storage, retrieval, manipulation and controlled circulation of documents in electronic format. On the other hand, the ERMS definition also supports the life cycle view by stressing that ERMS are designed to manage the maintenance and disposition of records. According to ICA, ERMS is an automated system used to manage the creation, use, maintenance and disposition of electronically created records for the purposes of providing evidence of business activities. These systems maintain appropriate contextual information and links between records to support their value as evidence.[116]

Johnston & Bowen[117] make a distinction between ERMS and EDMS by defining ERMS as an electronic system for managing records on any media. They go further to explain that an electronic system for managing paper records in a record centre or registry would be an ERMS.

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112 In 2004, the committee completed its first technical report, Framework for Integration of Electronic Document Management Systems and Electronic Records Management Systems (ANS/AIIM/ARMATR48-2004)

113 Singh et al. 2007, 135-81.

114 Gunnlaugsdottir J.2008, 22

115 Raynes M. 2002,305

116 ICA, Principles and Functional requirements for Records in Electronic Office Environments, Draft, February 2008

117 Johnston G.P & Bowen D.V. 2005, 132

The White Paper[118] on document and record management makes a distinction between the two, based on the reasons for implementation. The driving factor towards the implementation of DM systems is the sharing of knowledge and collaboration capabilities that can be enhanced by having a document repository in place.

On the other hand, a RM system is more focused on maintaining a repository of evidence that can be used to document events related to statutory, regulatory, fiscal, operational or historic activities within an organisation.

Based on the above distinction, it is clear that ERMS are designed to automate records management controls while EDMS lack the capabilities for records control.

In August 2004, AIIM International published the ANSI/AIIM/ARMA TR48-2004 Framework for the Integration of Electronic Document Management Systems and Electronic Records Management Systems. The technical report defines, describes, and differentiates between the two most common types of information systems used to manage electronic document-based information with current technology-electronic document management systems (EDMS) and electronic records management systems (ERMS) and provides a framework for their integration.[119]

AIIM goes further to differentiate between the features of EDMS and those of ERMS. The EDMS allows documents to be modified and to exist in different versions; it may allow documents to be deleted by their owners; may include some retention controls; may include a document storage structure, which may be under control of users. It is intended primarily to support day-today use of documents for ongoing business. It has some key features such as check in/check out and locking, version control; roll back, audit trail, annotation and stamps and summarisation.

EDRMS has electronic capability that helps in the management of both electronic and physical records. In case of physical records, it records their location and other information about them. ERMS prevents records from being modified, prevents records from being deleted except in certain controlled circumstances, must include a rigorous arrangement structure which is maintained by the administrator, may support day-to-day working, but is

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[118] Emery P.2003

[119] In 2004, the committee completed its first technical report, Framework for Integration of Electronic Document Management Systems and Electronic Records Management Systems (ANS/AIIM/ARMATR48-2004)

also intended to provide a secure repository for meaningful business records. Some of its key features are declaration, classification, access control, disposition, and long-term preservation.[120]

The business decision to acquire or develop integrated EDMS/ERMS results from the need to ensure that documents in an EDMS that qualify as records will be designated as such and given the special treatment and protection they require. This is in line with AIIM in that EDMS allows documents to be managed but lack the strength of ERMS, which is managing records throughout their lifecycle.

EDMS involves not only a software system for managing the documents and a database for managing the metadata of the documents, but also includes other technologies such as document imaging, document retrieval, reporting, character recognition, document management, workflow, form processing, content management, digital signature management, and storing and archiving technologies.[121]

Other key EDRMS technologies are workflow, business process management and collaboration.

Workflow is usually found as an accompanying feature in many EDRMS solutions. The International Association for developing workflow standards (WFMC) defines workflow as the automation of a business process, in a whole or in part, during which documents, information or tasks are passed from one participant to another for action according to a set of procedural rules. Workflow is therefore used to move information from one individual to another or from department to department. [122]

Business Process Management is another tool commonly used in EDRMS. It is more powerful and more complex than workflow and does not allow ad hoc routing of documents, only clearly defined processes. BPM has all the workflow features but it goes further, providing understanding of the time that is taken to carry out a particular step or the cost associated with a particular processes. It also provides the relationship between content and an organisation's business process. This relationship can have benefits for an organisation as

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[120] AIIM ECM Master Workbook

[121] Vevaina P. 2007

[122] Workflow Management Coalition http://www.wfmc.org/ viewed on 16/03/09

it enables it to take a view of its capacity to carry out particular processes.[123] The leave of absence process is one example that is widely implemented by Government Departments.

Another important technology in EDRMS is collaboration technologies used to share information. According to AIIM, collaboration is a working practice whereby individuals work together to a common purpose to achieve business benefits. The individuals may be members of a single team, sit in different divisions of an organisation, or even work in different offices. They may be geographically co-located or be dispersed in different time zones. Collaborative working is much more dependent on a culture of working flexibly across organisational boundaries, on an understanding and willingness by personnel to share information in a common space. Collaboration technologies have been long in existence in the form of knowledge-sharing, groupware and conference calls. What is fairly new in collaborative working is the use of Web-enabled applications.[124] Collaboration also gives organisations a competitive advantage by enabling the sharing of knowledge amongst the organisation's experts and even out to its suppliers and partners.

4.4 Enterprise content management

The IDMS Project at the Presidency was initiated in 2003 when the generally accepted terminology was EDRMS. ECM has now become the industry-standard name for solutions that include IDMS, ERMS, Workflow, Business Process Management, Collaboration, and Web Content Management. From the different technologies that make up ECM, it is clear that ECM is not a single system but a group of aligned systems that manage unstructured information.

There is no single agreed, standard definition of ECM; however the most widely used is the one introduced by AIIM which defines ECM as "…the strategies, methods and tools used to capture, manage, store, preserve and deliver content and documents related to key organisational processes". At the most basic level, ECM tools and strategies allow the management of an organisation's unstructured information, wherever that information exists.

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[123] AIIM ECM Master Workbook (Manual)

[124] AIIM ECM Master. http://www.aiim.org/education/ecm/ecmp101/player.html viewed 17 /03/09

Unstructured information means letters, E-mails, and reports etc. as opposed to databases or accounting systems, which contain structured information.[125]

The key words that highlight and put this definition into context are "capture, manage, store, preserve and deliver". Organisational processes in the definition show that ECM is not only about technology but also about business and organisational processes.

SITA Tender 398[126] has also adapted the AIIM definition and defines Enterprise Content Management as "…the tools and technologies used to capture, manage store, preserve, and deliver content and documents related to organisational processes by enabling four key business drivers namely continuity, collaboration, compliance, and cost".

A more elaborate definition is provided by Paivarinta and Munkvold: "ECM consists of a wide set of interrelated issues: objectives and impacts, content and enterprise models, infrastructure, administration, and change management".[127] The Nordheim and Paivarinta definition of Enterprise Content Management (ECM) is aligned with AIIM's definition and brings in the lifecycle view to the definition. They define ECM as "…an integrated approach to managing an organisation's information including strategies, processes, skills, and tools. ECM integrates the management of structured, semi-structured, and unstructured information and embedded pieces of software code throughout the entire content life-cycle in the organisational contexts of content production and utilisation".[128]

The key components of ECM can be presented in a form of a roadmap by AIIM[129]:

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[125] AIIM ECM Master. http://www.aiim.org/education/ecm/ecmp101/player.html viewed 17 /03/09

[126] SITA Tender 398: Enterprise Content Management Solutions. http://www.national.archives.gov.za/rms/circulars/circular_4_of_2006.PDF viewed on 05/05/2010

[127] Paivarinta T & Munkvold B E. 2005 , 96

[128] Nordheim S & Paivarinta T*, 5-8 Jan. 2004*

[129] AIIM http://www.aiim.org viewed 16/11/10

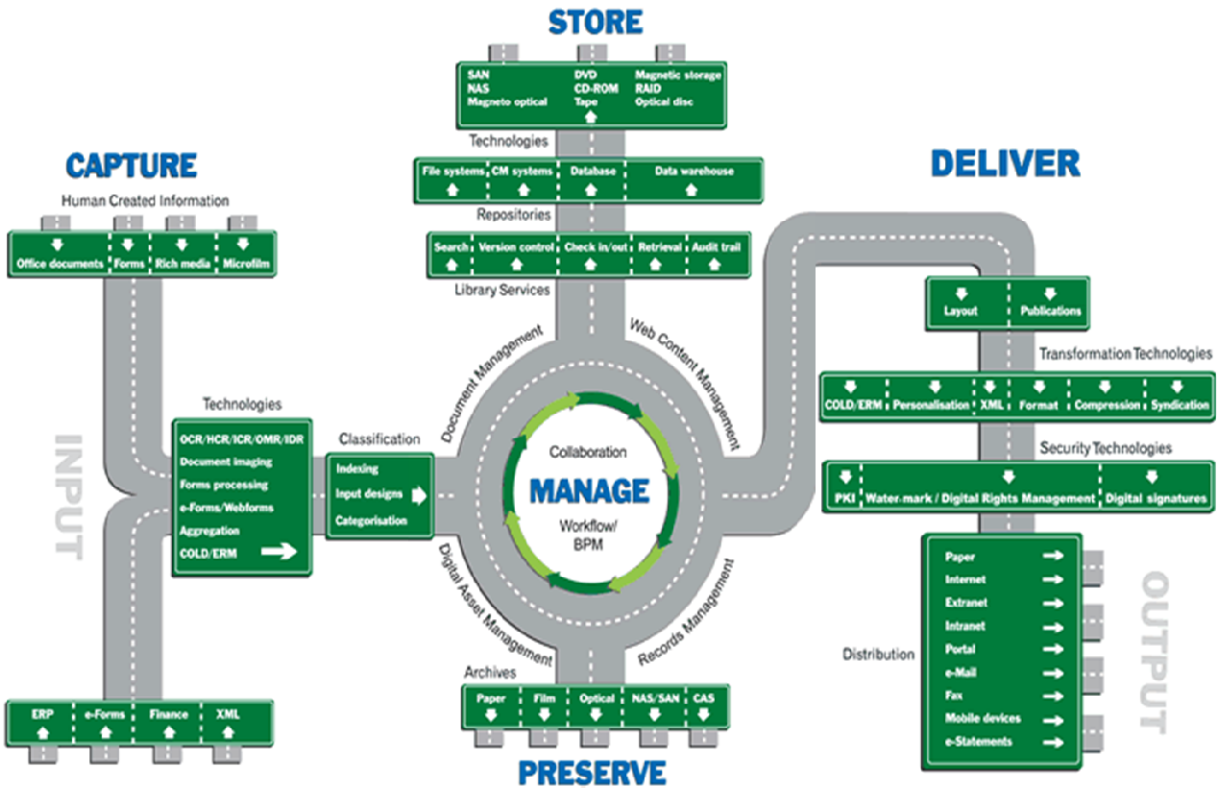

Figure 4.2: AIIM ECM Roadmap

Source: AIIM ECM Certificate Programme: ECM Master Workbook

Capture – The first step in managing the content is getting it into your IT infrastructure. According to AIIM "capture is the process of getting information from the source into an ECM environment or system, and recording its existence in the system.

The most common way of capturing is scanning which is used by most organisations to capture content from paper, photographic images and microform. Most systems employ other technologies such as optical character recognition during the scanning process. Other formats that are normally captured on the ECM are faxes email messages and electronic files. Indexing is critical as part of the capture process and ensure retrieval of documents.

Store – The documents that are captured into the ECM need to be stored in a storage repository. Storage can be managed in-house or by external contractor. This is highly dependent on the organisation. For government institutions storage of electronic documents is linked to the file plan which forms part of the Records Management of the ECM Solution.

The stored data need to be managed to ensure that documents that are needed to make business decisions are retrieved without delays.

Manage – The ECM environment need to be managed and administered. System administrators are given rights so that they are able perform events such as changing users, recovery from system failure and monitoring system errors

Preserve – Preservation is about getting a durable medium and appropriate storage conditions and disaster protection. There are number of digital preservation techniques and current standards and guideline that are laid down by the NARSA for government bodies.[130]

Deliver – Delivery is about ensuring that users are able to search and retrieve relevant information. When relevant content is retrieved, it can be delivered to the users in different formats. For example, it can be a web page, paper document, email attachment or reference to the document.

4.5 Enterprise resource planning

Enterprise Resource Planning (ERP) systems are highly integrated enterprise-wide information systems that automate core business processes.[131] It has also been known as Enterprise Systems and the literature supports that the concept of ES has evolved over almost 50 years, driven by the changing business requirements, new technologies and software vendors' development capabilities.[132]

ERP allows the integration of functions and businesses divisions in terms of information exchange and flow, and the integration of core corporate activities such as manufacturing, human resources, finance and supply chain management.[133]

Laudon & Laudon[134] suggest that ERP systems are based on a suite of integrated software modules and a common central database. The database collects data from the business and feeds the data into numerous applications that support most of the organisation's internal activities.

The potential benefits of implementing ERP are that it facilitates rapid decision-making, cost reductions and greater managerial control.[135] Laudon & Laudon quote benefits such as

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[130] NARSA, http://www.national.archives.gov.za viewed on 05/11/2010

[131] Holland C.P & Light B.1999, 30-36

[132] Moller C. 2005 , 483-497

[133] Woo H.S. 2007,431-442

[134] Laudon K.C & Laudon J.P.2006, 55

[135] Holland C.P & Light B.1999, 30-36

creating a more uniform organisational culture especially for geographically dispersed offices and improvements of reporting and decision making.[136] ERP break silos by encouraging collaboration in terms of work processes within geographically dispersed offices.

Although there are numerous benefits associated with ERP implementation, similar to EDRMS, these systems are always subject to challenges. Laudon & Laudon[137] suggest that about 70% of companies that have invested on ERP system have not obtained the promised benefits on schedule or spent much more than originally anticipated. Similar statistics also come out in Vivaina's thesis on ERP implementation, in which he states that more than 50% of ERP projects have been seen as unsuccessful or do not achieve their expectations.[138]

Implementing ERP poses various challenges such as high total cost of ownership, extensive organisational change, difficulty in realising strategic value and low user acceptance have been cited by various authors. Al Mashari [139] also raises these common problems associated with ERP. Among these is resistance to change when for example some employees become reluctant to learn new techniques or accept new responsibilities. Another problem mentioned is poor training of end users who, when the system has been rolled out, do not know how to use it and maintain it continually.

The challenges are rooted to the fact that enterprise technology requires not only technological change but fundamental changes in the way the business operates. [140]

4.6 The research focus on EDRMS

It is evident from the literature above that while EDRMS is usually recognised and utilised independently, it is also a common component found within an Enterprise Content Management and Enterprise Resource Planning environment. The implementation of EDRMS at the Presidency took place at the time when the concept accepted by industry was EDRMS and not ECM**.**

AIIM[141] looks at the evolution of these technology as well as change in the terminology based on the functionality. When these technologies first emerged in the early 80's they were

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[136] Woo H.S.2007, 431-442

[137] Laudon K.C & Laudon, J.P.2006,402

[138] Vevaina, P.2007

[139] Al Mashari M, 2002,165 -170

[140] Laudon K.C & Laudon, J.P.2006, 403

referred to as Document Imaging because their functionality only allowed users to convert hardcopy documents into electronic format. A few years later, this was supplemented with basic routing of documents. In the 1990 the technologies started expanding to enable organizations to incorporate electronic files into repositories. This resulted in the change of the use of the term "Document Management" to "Document/Library Services" to better describe what the technology provided. The change of the term "Document Management" to "Document/Library Services" was an important change because the term "Document Management" was initially used to describe the capability to store electronic information and later was updated to "Document/Library Services" which was a term everyone agreed best described this core technology functionality.

The term "Document Management" was viewed as limiting in scope, the term "Content Management" became the preferred term based on the time of implementation and core functionalities that have been implemented[142]

Since the implementation of ECM is at its early stages in South Africa, the Government has followed the traditional way of implementing EDRMS, where implementation is done in the form of separate technologies that provide functionalities in imaging, document management, records management and workflow.

The technology components that comprise ECM today are the descendants of the EDRMS software products that were first released in the early 1990s. In the past, organisations focused heavily on the document management aspect of content management, and neglected issues such as retention, archival, workflow and reporting. The evolution document management has lead to an enterprise-wide strategy which encompasses the entire content life cycle from creation and approval through to retention and disposition. [143]

Additionally, the need for EDRMS is being fuelled by a number of key business drivers. The following sub-section will discuss significant drivers for acquiring EDRMS. Recent literature has used the term ECM to refer to the same technologies for managing documents and records, hence the researcher will in some cases use EDRMS and ECM as interchangeable, depending on the source used.

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[141] AIIM http://www.aiim.org/

[142] AIIM http://www.aiim.org/

[143] AIIM http://www.aiim.org/

4.6.1 EDRMS business drivers

There is a growing demand for and interest in EDRMS technologies. Business drivers that have been widely cited in literature are:

- compliance
- effectiveness
- efficiency, and
- continuity.[144]

Compliance refers to laws, regulations, policies, standards and good practice. In South Africa such legislation will include the Promotion of Access to Information Act, National Archives Act and other related legislation. Most organisations are forced more that ever to show an ability to be compliant and demonstrate that compliance. The organisation may need to prove that it has taken certain decisions or has complied with records management requirements.

Effectiveness derives from a need to do things better in a way that is sensible for the business or organisation. Examples of the improved effectiveness that EDRMS usually brings to the organisation include; not losing records, sharing records, finding records easily and getting a complete picture of what is going on in an organisation for audit and archival purposes.

Efficiency is closely related to cost savings. Cost is always a factor, with the current global recession and companies, big and small, are constantly looking at ways of cutting cost and at the same time maximising output. Effectiveness is rated as a bigger driver than efficiency as it provides more benefits. Companies are becoming aware of the cost of keeping or managing information.

Continuity means being able to maintain and recover information in the event of a breakdown or disaster.[145]

The AIIM User Survey [146]on why companies buy EDRMS and ECM Technologies is detailed in the table below.

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[144] AIIM Knowledge Centre Blog http://aiimknowledgecenter.typepad.com/weblog/2007/04/why_do_you_need.html: viewed on 09/01/2009

[145] AIIM Knowledge Center Blog , 4 April 2007

What is your most significant business driver for acquiring an ECM solution?	2003-2004	2004 -2005
Cost-driven users	**56%**	**45%**
- Improved efficiency	32%	26%
- Reduced cost	17%	11%
- Increases profits or improved performance	7%	8%
Customer-driven users	**29%**	**31%**
- Better customer service	16%	15%
- Leadership, competitive advantage	7%	8%
- Faster turnaround, improved response	6%	8%
Risk-driven users	**15%**	**24%**
- Compliance	11%	19%
- Risk management /Business continuity	4%	5%

Table 4.1 ECM Business drivers

Source*: AIIM User Survey: The Practical application of ECM technologies*

The table details the most significant drivers of ECM. The first column categorises the ECM business drivers into three. The second and third column gives percentages for years 2003-2004 and 2004-2005 respectively. The research classifies the business drivers into three categories: cost-driven, customer-driven and risk-driven users. Those users who have implemented ECM in order to improve efficiency, reduce costs, increase profit or improve performance are higher as a percentage than those who would like to improve customer service, improve leadership and competitive advantage. The business drivers have remained

[146] AIIM User Survey: The Practical application of ECM technologies

stable through 2003 -2005, with cost driven user depicting a high percentage and risk driven users being the lowest.

The following subsection reviews different case studies to uncover benefits that are expected from implementing EDRMS.

4.6.2 Benefits of implementing EDRMS

Different organisations have different reasons for implementing EDRMS and different authors cite a vast number of benefits achieved once the system has been implemented.

Johnston & Bowen[147] have preferred to focus on benefits that can be measured and which are experienced by individual users, the organisation and society as a whole. Basic benefits focus on how the process can be done more easily, more quickly, with better quality and how documents can be easily accessible. The benefits proposed by Johnston and Bowen are more broadly expatiated, as they track the life history of documents and records from draft to record generation and finally to the benefits to society in the long run.

The potential benefits derived from implementing EDRMS have been identified by AIIM Industry Watch[148] as labour-saving, capital expense reduction, productivity benefits, business benefits and risk reduction benefits.

Different case studies have been reviewed and the benefits derived from implementing EDRMS are varied.

Case 1: AIIMLAB

The benefits as identified in the AIIMLAB business case study[149] have been categorised as benefits that can be quantified in financial terms and those that can be quantified in non-financial terms and in non-quantifiable or intangible benefits.

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[147] Johnston G.P & Bowen D.V. 2005, 131 -140

[148] The AIIM Industry Watch is a summary of industry trends based on survey data collected from the AIIM end-user community.http://www.aiim.org/Infonomics/ArticleView.aspx?ID=30887 viewed on 22/04/10

[149] AIIM ECM Master Workbook

For benefits that are quantifiable in financial terms, AIIM suggest that a cost/benefit analysis should be applied as a measure. For example: in the AIIMLAB case study, the implementation of the collaboration component of the EDRMS brought about savings in travelling costs, since the company has offices all over the world. As this is a research-based organisation, other savings could follow in the following areas:

- research costs – savings in the cost of doing research and "reinventing the wheel", as information and research findings can easily be shared across the laboratories
- staff costs – in the same company for instance, the implementation of the correspondence process has brought about cost savings in staff who deal with documents and correspondence management, as fewer resources are needed.

Benefits that are quantifiable in non-financial terms can be quantified in terms of how AIIMLAB staff performs certain tasks compared to before the EDRMS was implemented.

For example, it used to take AIIMLAB staff an average of 20 minutes to attend to a correspondence related query; where it now takes less than five minutes to respond to the same query. Other areas where benefits quantifiable in non-financial terms can be expected are:

- a reduction in sit-down meetings
- 70% of unstructured information being saved on the system.

Intangible benefits may include the following examples from the AIMLAB case study environment:

- the extent to which a secure, central repository is established for all corporate records
- the extent to which a culture of awareness of document and records management is achieved.

Intangible benefits can be measured by monitoring progress or measuring the area linked to the intangible benefit.

Dis-benefits also need to be monitored, so that the risks associated with it are able to be mitigated. For AIIMLAB these are:

- implementation costs
- ongoing system maintenance costs

- ongoing costs for systems, management and administration and information management.

Case 2: The Estate Department of British Library

The Estate Department of British Library have grouped their reasons for choosing electronic records management systems into compliance-related and business-related reasons.

Maguire[150] states that business-related reasons were the primary drivers for the Estate Department. The main business reasons were the sharing documents across several staff members dispersed over all British library sites, make finding information easier, stopping duplication and helping Version Control to make Estates run more efficient.

Case 3: National Weights and Measures Laboratory (NWML)

The driver for EDRMS at NWML[151] was an E-government initiative and the need for effective Freedom of Information (FOI) enquiry control. The benefits are grouped into tangible and soft benefits. Tangible benefits can be summarised as:

- time-saving in searching for and filing documents
- time and cost savings in paper printing and copying
- space saved on physical documents and filing cabinets.

Soft benefits can be summarised as:

- improved customer service
- reduced target times as representative clerical tasks were reduced because of information sharing
- institutional memory, where 25% of the people were lost in every five years through retirement – EDRMS would move the knowledge around the resource more easily
- reduced silo mentality, resulting in a reduction of duplication
- creating an accessible corporate memory by open security as a default

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[150] Maguire R.2005, 151

[151] Williams D. 2005,159

- electronic delivery of business/corporate documents

Case 4: Queensland Forestry

Queensland Forestry[152] implemented EDRMS mainly to streamline and create one system for the management of records across the District Offices. The expected benefits as stated in their project was to have a single electronic document and records management system, to have a single repository for all corporate documents and for the records management function to be owned by the whole organisation.

Case 5: The Public Office of Northern Ireland (PRONI)

When reviewing their EDRMS implementation, PRONI cite benefits such as being able to do an analysis of its current records management procedures, control over corporate business records, registry policies, an up-to-date classification scheme, which reflects the agency's business processes, less duplication of information and varying levels of trained and competent staff in record keeping, and a culture of sharing information.[153]

Case 6: AIIM & AIIM

The key issues that led AIIM & AIIM to initiate an ECM programme was to improve information and content management and reduce duplication and redundancy of information. A lack of auditability in the lifecycle of documents had also presented difficulties in defending certain business decisions and actions and needed improvement within the AIIM & AIIM environment. It also wanted to achieve effective management and control of correspondence received from clients.

Benefits expected from the implementation were improved efficiency, reduced costs and smarter, automated business processes, the management of structured and unstructured

[152] Harris R.G.2005, 2

[153] Smyth Z.A.2005,141 -149

content, making content more widely available, regulatory and legislative compliance and disaster recovery or business continuity. [154]

Case 7: Pakistani Local Government

The Pakistani case demonstrate that EDRMS have led to increased efficiency and effectiveness in Government, increased transparency and accountability in decision making, and enhanced delivery of efficient and cost-effective public services to citizens. [155]

The case studies cited above show clearly that EDRMS improve processes, decrease costs and legal risks.

The next section explores the steps involved in the implementation of EDRMS.

4.7 EDRMS Implementation

The actual EDRMS implementation involves complex technical and social issues. Laudon & Laudon[156] state that the implementation outcome can be determined by the role of users in the implementation process, the degree of management support for and commitment to the implementation effort, the level of complexity and risk of the implementation project and the quality of management of the implementation process.

An EDRMS implementation typically takes anything from 12 months for small, simple enterprises to 36 months or longer for complex multi-divisional enterprises. For example, PRONI's EDRMS project had three stages, a preparation stage of 14 months, an implementation stage of three months, followed by an operation stage which lasted for four months.[157] The implementation process begins with the selection of the system and only ends with the training of the users and post-implementation support. Chester[158] also claims that implementation always takes longer than planned. Delays are usually due to scheduling

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[154] The AIIM & AIIM case study was taken from ECM Case study booklet for AIIM ECM Certificate programme.

[155] Henriksen H.Z & Andersen V.2008, 40 – 52

[156] Laudon K.B & Laudon J.P. 2006, 551

[157] Smyth Z.A.2005

[158]ECM Implementation Misconceptions. http://www.aiim.org/infonomics/ecm-implementation-misconceptions.aspx viewed on 08/01/2010

conflicts, technical preliminaries, and the priorities of keeping the business running. A good plan has allowances for schedule and cost over-runs.

To understand EDRMS implementation requires an understanding of its implementation life cycle. The AIIM ECM implementation lifecycle has been widely used, although it has been adjusted by most organisations. EDRMS implementations have also adopted similar implementation lifecycles.

The AIIM ECM implementation lifecycle identifies 12 steps to an ECM implementation lifecycle. The table below lists the steps:

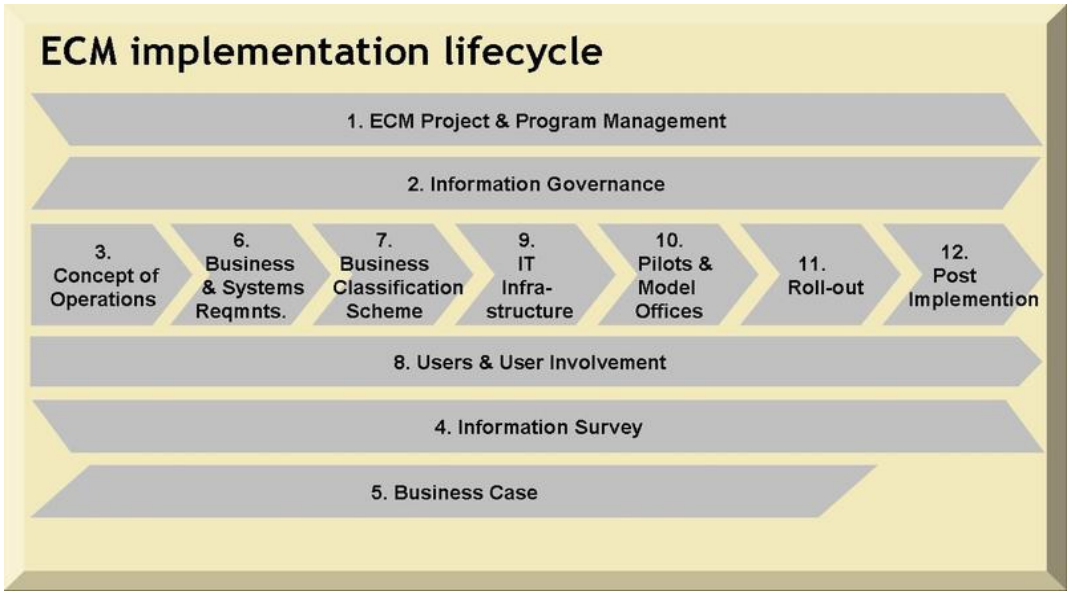

Figure 4.2 ECM Implementation Lifecycle

Source: AIIM ECM Master Workbook

Step 1 covers managing the program and its constituent projects. "Program" is an encompassing term that also refers to smaller projects that make up the ECM.

Step 2 addresses the governance of the organisation's information and cuts across the entire lifecycle of ECM implementation.

Step 3 explains the concept of operations (ConOps). This is a basic statement of the vision of the organisation and what it seeks to achieve once ECM has been implemented.

Step 4 addresses an information survey, which determines the state of information in a particular organisation. The information survey needs to be updated regularly throughout the ECM lifecycle and so is shown to continue throughout the lifecycle in this diagram.

Step 5 explains the business case for an ECM-related program. The final version of the Business Case is the Benefits Evaluation, which is determined on the basis of the results of the pilot implementation.

Step 6 explains how to create a set of good business and system requirements for an ECM-related program.

Step 7 explains how to decide on and create a business classification scheme (BCS) that is appropriate for an organisation. In this study, we have referred to a BCS as file plan.

Step 8 first explains the information that is needed by users during the ECM lifecycle and how to gather it. It then goes on to consider what involvement from users is needed throughout the ECM lifecycle and offers advice on how to make that happen.

Step 9 addresses issues concerning the IT infrastructure during an ECM related program.

Step 10 considers the pilot phase within an ECM program. This starts once the draft new environment, including technology, roles and responsibilities, processes, procedures, training and support, has been determined and tested.

Step 11 considers the roll-out phase of an ECM program. This starts once the pilot has proved adequately successful and the full environment for roll-out has been finalised and tested. It ends when roll-out is complete and the post roll-out review has been produced.

Step 12 is called “post-implementation” and starts after roll-out has been completed and it stretches over a period of years.

4.7.1 Measuring success in EDRMS implementation

A number of EDRMS projects have failed to provide the benefits or the return on investment that were expected when the project was initiated. These failures require that a look be taken at approaches that can be used to measure IS success as it is difficult to identify benefits derived from EDRMS implementation without looking at success measures. A number of IS evaluation approaches have been cited in literature. The evaluation approaches presented in this section are not specific to the EDRMS, but general to IS. These approaches can well be applied to measuring EDRMS success.

The majority of measurement approaches have been criticised as mainly focusing on post-implementation measures and not measuring before implementing IS projects. Saleh and Alshawari[159] study looked at a GPIS model as a way of measuring IS success. The model is divided into six maturity levels, where each level is explained by four key elements: IT infrastructure, people, processes and the work environment.

The most popular measure has been the DeLone & MacLean[160] n success model, that evaluates IS as a product. The D&M IS model looks at the following:

- quality, which measures technical success
- information quality, which measures semantic success, and
- user satisfaction, individual impacts and organisational impacts, which measure effectiveness success.

In measuring a Knowledge Management System such as EDRMS, this model has been also been slightly modified and extended by Maier[161]. For measuring success of KMS, the model operates at three levels; the deployment level, development level and the delivery level. The deployment level deals with information, communication and knowledge quality and knowledge specific service; the development level comprises usage and user satisfaction; the third level contains criteria to evaluate the impact of the system's use.

Information communication and knowledge quality – The focus shifts from D&M's system quality, because with KMS the focus is on context of knowledge, i.e. the measure of the knowledge elements that are documented by experts, users, groups and communities that interact with the system. System use and user satisfaction are the degree to which the contents as well as the knowledge structure and visualisation of the system fulfil user needs.

Impact on individuals relates to how EDRMS affects individual behaviour and performance – impact on collectives of people accepts that participants work in social groups or collectives.[162]

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[159] Saleh Y & Alshawari M. 2005

[160] Delone W.H & McLean. 2003,9 -30

[161] Maier R.2004,326 -349

[162] Maier R. 2004, 326 -349

Maier[163] also presents a range of factors that can influence KMS but are not covered in the D&M model. These are the characteristics of the participants, communications not supported by KMS, organisational structure and processes, and organisational culture.

Goodwin's approach focuses on measuring ECM maturity within an organisation. It helps an organisation to position its ECM success within a maturity level.[164]

The ECM maturity model is tabled below:

Maturity level	Description
1. Working together	Files are saved in a location such as shared drive and Web collaboration while others are given access rights to the files
2. Having a secure repository	Copies of business critical documents are safely stored, secured and archived centrally
3. Consistent organisation	Recognises the need for consistent organisation and classification, realiable searching and understandable security model
4. Guaranteed relevance	Having the right people to access, edit documents.
5. Collaborative working	Attention is on planning, coordinating and controlling business processes. This needs a good culture of document management.
6. Managing and automating business processes	Applying the full capabilities of the ECM technology to automate business work.
7. Optimising worker productivity	Moving from merely managing documents to automating and managing processes for creating and developing those documents.
8. Integration across enterprise application	Concerns about reducing islands of automation and having one enterprise system. `

Table 4.2 ECM maturity model

Source: *Goodwin, M. 2006. The Enterprise Document Management Maturity Model: White Paper.*

[163] Maier R.2004,353 -355

[164] Goodwin M .2006

In identifying factors that affect EDRMS acceptance, technology acceptance model literature will also need to be looked at. The most widely used tool to measure technology acceptance is Technology Acceptance Model (TAM). The study based on TAM found the factors that determine acceptance or lead to rejection of information systems by end-users. The following factors are cited in TAM literature[165]:

Attitude towards using the system, a measure of an individual's positive and negative feelings towards the system. People only use the system that they benefit from. Self-efficacy relates to initial perception of the user's ability to use the system independently. The users will only use the system that they feel comfortable with.

Anxiety measures anxious and emotional reactions when using the system. More often than not, there is a fear factor in using new technology or technology, usually a fear of "breaking" the system.

Performance expectancy is the degree to which an individual believes that the system will help attain job performance. Social influence defines a degree to which an individual perceives that important others such as bosses, colleagues believe that he or she should use the system.

Facilitating conditions is the provision of support for users in terms of computer hardware and software necessary to work on the system.

Perceived strength of control is about system security.

Top management support refers to the extent to which the top management is involved into the planning and implementation of the project.

Voluntariness of use deals with the degree to which the use of the system is perceived as being voluntary.

Intention to use the system is the measure of one's intention to use the system.

The literature has cited other different measures to evaluate the success of an information system project including system use, user satisfaction, attitudes towards the system, the degree to which the system accomplishes its objectives and payoff to the organisation.

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[165] Sherer et al. 2003, 323

4.7.2 Key success factors in implementing EDRMS

It is important to get an understanding of what could affect an EDRMS implementation and its day-to-day operations. Most success factors seem obvious, but most implementations tend to focus more on technology so that these other factors that have been cited in most projects that have been categorised as successful, tend to get forgotten.

Heeks[166] presents findings showing that along with the successes there seem to be significant numbers of IS projects in developing countries that fail in some way. According to this study information systems can be categorised in three outcome categories:

- failing totally, in that the new system was implemented but immediately abandoned
- partial failure, where not all major goals have been achieved, or
- undesirable outcomes.

Success on the other hand is when all major goals have been attained and there is no experience of significant undesirable outcomes.

Yeo[167] cites Lyytinnen and Hirscheheim on four major categories of IS failure:

- correspondence failure, when the IS fails to meet its design objectives
- interaction failure, when the users maintain low or no interaction with the IS
- process failure, when the IS overruns its budget or time constraints
- expectation failure, when the IS does not meet stakeholders' expectations

The failure rate of EDRMS implementations calls for better understanding of critical success factors. The study based on eight organisations in Iceland on the implementation of the EDRMS revealed the following success factors:

- top management support, and
- cooperation of the IT and RM functions in system development and in training users in both RM and the EDRMS. [168]

Research done by Liebowitz[169] conducted on why information systems fail, highlight the following success factors:

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[166] Heeks R.2002, 101 -102

[167] Yeo K.T.2002,242

[168] Gunnlaugsdottir J. 2008,28

- user involvement in development
- support from senior management
- realistic expectations
- good communication on requirement gathering
- joint agreement on timelines for completion
- managed expectations
- a structured development process
- suitable personnel, and
- requirements well defined.

The successful of implementing EDRMS at the City of Charles Sturt, South Australia can be attributed to the following factors:

- The vital role played by senior executive support especially that of the CEO
- The culture of open communication\supportive of staff involvement and risk-taking throughout the project.
- A clear understanding by key players of the benefits of the project and their energy in pursuing outcomes
- The emphasis on consultation from the earliest days of the project
- The pressure for uptake from fellow employees.[170]

Buy-in by top management usually appears at the of the list of success factors; however Gregory agues that although senior management buy-in is very desirable, it is possible, with determined and resolute personnel, to implement an EDRMS without it. The desired results can be achieved if senior management empowers the project team to produce the results but does not get personally involved.[171]

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[169] Liebowitz J.1999, 66

[170] Walkins et al. 2009

[171] Gregory K. 2005, 80-85

Change management is also postulated to be central in determining the success of EDRMS. This involves changing the fundamental ways that people do their work, because it assumes a responsibility for document and records management. [172]

According to AIIM, organisations should meet both the functional and non-functional requirements for the system to be a success. Functional requirements specify how the system should behave. Non-functional requirement relate to more abstract features such as speed, reliability and ease of use of the system. These factors will determine if users are accepting and using the new system.

Ease of use of the new system is very important as it has a great influence on the willingness of the users to adopt the new system and possibly change their old ways of working. The performance and availability of the system is an equally important factor as it relates to the willingness to use the system and any new related ways of working.

In line with the success factors that were uncovered in the case studies, AIIM propose four key success factors for implementing ECM initiatives.

- communication
- culture change
- training
- development.

The key to change management is timely and appropriate communication with the user community to ensure that they are aware of the need of the EDRMS initiative, understand the reasons for it, understand the tasks needed and are supportive and positive about the initiative.

A successful EDRMS depends on fundamental cultural and attitudinal changes regarding the extent to which staff think content is a corporate resource, the extent to which they are willing to share knowledge and work across functional and hierarchal boundaries.

Training and development are critical to enable users to operate effectively and efficiently in the new environment.

Other factors that are put forward by AIIM[173] as are:

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[172] Harris, R.G. 2005

- understanding the range of different suppliers' capabilities
- clarity about ECM terminology and what the organisation is investing in
- tracking and understanding advancing standards relating to ECM
- effective programme and project planning
- time management
- understanding the potential scope for business change activities, and
- being alert to opportunities for process redesign where appropriate.

4.7.3 Change Management related to EDRMS implementation

While there have been studies focusing on change management and information systems there has been very limited research focusing on EDRMS change in particular.

Change management, as described in the Framework underpinning CS Holding's approach to Change Management, focuses on the navigation of the organisation and its people though the impact of system implementation.[174] Change management is also defined as a process of continually renewing an organisation's direction, structure and capabilities to serve the ever-changing needs of external and internal customers.[175] Harris[176] describes change management as strategies and activities that support individuals, teams, and organisations through the challenges associated with change management is also a process of reducing resistance to change and increasing support/commitment to it, whether that be a change in process, structure, technology, reward systems, management practice, or culture.[177] The definitions cited above have people related factor as a basis. The common themes emerging out of the definitions are "organisation, people, external and internal clients and culture."

Implementing EDRMS is about managing change and therefore incorporating a change management strategy in the EDRMS implementation is very critical, however human beings

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[173] AIIM ECM Master Workbook
[174] Framework underpinning CS Holdings approach to Change Management
[175] Moran J.W & Brightman B.K. 2001, 111
[176] Harris J. 2006,36
[177] Sherer et al. 2003,321 -333

are creatures of habit [178] and this is also well put in systems theory that human beings are a purposeful system in that they can generate their own purposes from inside the system and these might not correspond at all to the purposes prescribed by managers or outsiders.[179] In change management language, one would call this "resistance to change".

The literature on change management and IT related projects implementation stresses the importance of overcoming resistance to change and effective communication to manage the change process.[180]

The success of any EDRMS implementation is not just measured by getting the system in on time and on budget, but by the ability and willingness of the people in the business to use the system effectively after it goes live. Unless performance changes to accommodate the requirements of the processes and barriers to effective performance are removed, the organisation will not be able realise the system's true value. The system implementation will inevitably result in changes to processes and the way people do their jobs. It is therefore imperative that the transition is managed effectively.

According to the framework underpinning CS Holdings' approach to change management show statistics that many technically good projects fail or have a high risk of failure due to people issues not being adequately addressed. The findings indicate that:

- one third of corporate software development projects are either cancelled or abandoned
- 51% of completed projects cost two to three times their original budget and take three times longer than planned to complete
- almost 50% of IT projects result in non-delivery of expected benefits and functionality, and
- only 30-40% of functionality is used after implementation.

In order to ensure a high degree of success, CS Holdings suggests that it is important to ensure that people culture, process and technology are aligned. [181] Payoff from IT related

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[178] Harris J.2006,36

[179] Jackson M.C. 2003,24-29

[180] Sherer et al. 2003. 321 -333

[181] Framework underpinning CS Holdings' approach to Change Management Information Systems Frontiers

projects is dependent upon their successful implementation of change management within the organisation. Many change-related technology projects fail because they focus primarily upon deploying the technology. Not enough emphasis is placed on how people need to change working methods to adopt the new tool in their day-to day work.[182] According to Laudon and Laudon, research on project implementation failures demonstrates that the most common reason for the failure of large projects to reach their objectives is not the failure of the technology, but organisational and political resistance to change. [183]

Laudon & Laudon[184] follow the sociotechnology view in studying information systems. In this view, optimal organisational performance is achieved by jointly optimising both the social and technical systems used in production.

The view also stresses the need to change technology in order to fit organisational and individual needs. According to Lamb, as quoted in Loudon & Loudon's book, this change should manifest itself through training, learning, and planned organisational change to allow the technology to operate and prosper.

Morgan[185] expresses similar opinion and emphasises that in designing or managing any kind of social system, whether it be a small group, an organisation or a society, the interdependence of technical and human needs must be kept firmly in mind. He further warns of a tendency that still exists within management, namely that of falling back into a strictly technical view of an organisation. In his article Van Rooyen[186] explains that information systems can be viewed as a system composed of three subsystems, namely hardware, software and otherware sub-systems, that relate to the people in the organisation using an information system. This also emphasises the importance of the human aspect of information systems that was highlighted in the definition of change management.

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[182] Sherer et al. 2003

[183] Laudon K. B & Laudon J.P. 2006, 84

[184] Laudon K.B & Laudon J.P. 2006, 27

[185] Morgan G.1998, 40

[186] Van Rooyen E. 2008

Morgan[187] warns that effective change depends on changing the images and values that are to guide action. Without this support it is unlikely that technical and structural changes will have the desired effect.

Elements that are crucial for change management strategies linked to EDRMS implementations are:

Business case for change – This is an important area of focus, because unless people believe in the reason for the change, they will not support it. There needs to be an understanding of why the change is happening and what the future state will look like. In the case of this EDRMS study, people have to understand why the Presidency cannot continue with the current way of handling documents and records and how the implementation of the EDRMS will change this. People should also understand what will happen if change is not implemented; for many EDRMS implementation, the legal risk associated with not managing records are usually put forward.

EDRMS specific communication – Communication is usually seen as the primary change management tool that is used to resolve concerns and issues that the stakeholders might have. Communication also ensures that information about the project, progress of the project reaches the right people at the right time in the right form.

In support of the statement, the Framework underpinning CS Holding's approach to change management states that an essential component of managing changes the communications and marketing process, which is essential for creating the bridge between the project team and the organisation, building buy-in, understanding and commitment to change and gaining feedback on perceptions around the project as it progresses.[188]

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[187] Morgan G. 1998,143

[188] Framework underpinning CS Holdings' approach to Change Management Information Systems Frontiers

I – Forest in their presentation for IQPC recommends a use of communication and marketing methods such as project newsletters, organisational magazines or intranet, computer based training, briefings, workshops and videos.[189]

A clear communication plan and strategy are essential for disseminating the vision, creating the case for change as well as providing a vehicle to build leadership visibility and credibility with the stakeholders.

Training – Effective training is key in getting the buy-in of the stakeholders at all levels. Once employees are given sufficient training they will fully understand the system and how to interact with it. This will help them perform their work within the new environment.

Training is an important activity and should include the training of system administrators, workflow administrators, users and trainers. Several important milestones emanate from this activity and should be sequenced into an approved project plan with appropriate metrics to measure performance and monitor progress.

4.8 Conclusion

In this chapter, the literature upon which the focus of the study has been based on was discussed. The chapter gave different types of information systems and went further to make a distinction between Records Management Systems and Document Management systems. EDRMS was then discussed in depth, focusing on its drivers, benefits, measures for success and key success factors. In discussing EDRMS business drivers different case studies have been cited. The next chapter outlines the findings of the study and presents them in a form of a framework.

[189] IQPC. Developing standards, policies and systems in electronic documents and records management .2005

Chapter Five
Factors Affecting EDRMS Implementation Framework

5. Introduction

This chapter will specify data collected and data analysis conducted in the study. The data in this study was obtained from the literature – as primary source – and from the interviews conducted with the EDRMS project managers, records managers and knowledge managers – as secondary sources. Some further secondary sources of the data were also obtained from observation sessions and from Presidency documents and records (official and non-official) as indicated in the previous chapters. The results of this study are presented in a framework derived from the research objectives of this study. The data was analyzed within and across cases to generate and refine the framework.

Based on the literature and the experiences of the organisations examined in the study, the factors affecting the implementation framework are presented and discussed. The structure of the framework is divided into three main areas, strategic factors, social factors and system factors. Each factor within the framework is discussed with reference to the factors that were uncovered during the interviews.

5.1 Theme analysis

The four interviews that were carried out were recorded with the permission of the interviewees. Audio recording was complemented by notes taken in short-hand. Taking notes with the recording also proved to be helpful in one interview, where the recording picked up intrusive background noise and in couple of cases where the interviewee lowered their voices.

The interviews spanned a period of two months and were transcribed from June to July 2009. Interview transcripts and the recordings were transcribed daily, immediately after the interview to write the interview report while it was still fresh in the mind. When doing the tape recording transcription, the interviewer was able to evaluate what to include in the tape transcript and what not.

During preliminary data analysis, the transcripts were teased out for key elements and initial broad categories. These were then developed in terms of the original study research questions. This process, as proposed by Gorman & Clayton[190] is intended to begin the process of reducing masses of data to meaningful and manageable portions.

Noticeable themes from the interviews were able to be identified. The interviewer used different coloured highlighter pens to mark different themes. By using this method of theme selection by highlighting, it was able to pick out all the references to the topic and leave everything else out. This increases the objectivity of the material while reducing the risk of only selecting bits that conform to preconceptions.

5.2 Framework on factors affecting EDRMS implementation

The themes that relate to the research were also checked against the literature on EDRMS implementation. The criteria used in weighing the importance of the themes were based on the original study research question and also on the frequency of appearance of the themes.

The framework of the three main categories Strategic factors, Social factors and System factors, is discussed in the next section.

5.2.1 Strategic Factors

Business Case – This concept involves the economic and strategic justifications for implementing an EDRMS. A business case highlights the benefits of the implementation of the EDRMS; it shows how the EDRMS supports a business strategy and helps convince senior managers to support the project. If the business case is not clearly defined at the beginning of the project, it becomes almost impossible to measure the success and benefits realised.

The impact of the business case on the EDRMS project was expressed by one of the interviewees who had just joined as project manager from an organisation where the system had been implemented with little success. The interviewee expressed this view:

> *Prior to joining the organisation, a very small percentage of users were using the system. We had to go back to the senior management and convince them why the*

[190] Gorman G.E & Clayton P 2005, 207

> *EDRMS was important for the organisation. We then drafted a business case and a project Charter.*

The business case should clearly emphasise benefits and cost. This was also highlighted by the interviewee.

> *The buy-in from top management was a really a big one for us, we had to emphasise the benefits and what the organisation could achieve if the implementation became a success. Top management wants to see what they are going to save in monetary terms if the system is implemented. I think they are also careful about throwing lots of money into fruitless expenditure; as you know, EDRMS projects cost millions of rands.*

Effective project and programme management – The interviewees expressed the need for managing the EDRMS project as a critical factor in the implementation process. Having a clear project schedule with clear timelines was also seen as important. One interviewee made this suggestion:

> *To me, implementing an IDMS was a worthwhile experience. A hint is to manage it as a project with a dedicated project team, activities, and get target dates"*

One interviewee felt that a bigger team and more appropriate team composition could have worked better in their environment:

> *Our team never consisted of more than eight members at any stage, a big mistake…from the project management point of view, more resources and more dedicated resources were needed. I had my responsibilities, my normal job but also had to manage the project.*

Contrary to the statement above, Gregory[191] believes that it is better for the long-term health of the project to have a small, dedicated team to do the hard work *(a work group)*, and a higher level *strategy group* to rubber-stamp key decisions. This method of working could well be more effective, but it must be balanced by the fact that it is much less representative**.**

[191] Gregory K, 2005,80 -85

There is also a need for drawing a project team from all functions and specialists within the organisation as well as the consultants that will transfer their skills and technical knowledge to the internal staff[192]

Finney & Corbett [193] advocate the need to establish a *steering committee* comprised of senior management from different corporate functions, senior project management representatives, and end-users when implementing an enterprise wide system.

It was also clear from a statement from one of the interviewees that it is not only about more and dedicated resources but also the correct composition of the team – critical roles and responsibilities need to be identified at the beginning of the project. The secondment of top-management into the project, the right teams from different business areas, also goes a long way to ensuring effective management of the project. Some of the most critical management roles and responsibilities, identified during the interviews, are those of the *project sponsors and champions*.[194] To emphasise the point, the interviewee said that.

> *If you have a few managers that buy into the system, they will in turn champion it at that level and also sell it to other managers.*

Several researchers iterated the need to have *a champion at a leadership level* – sponsor commitment is critical to drive consensus and to oversee the entire lifecycle of implementation.

Top Management support and commitment – The absence of visible top management support and commitment became dominant in the interviews; as a result of this lack of commitment the organisation normally does not see the EDRMS project as a priority. Interviewees felt that if top management is not committed to the EDRMS project, the chances of it failing are very high. One interviewee encapsulated this as follows:

> *No system like this is going to run smoothly unless you have the full buy-in from top management or people who hold a high position in the office to explain where this comes from. What's important is how it forms a backbone of the company.*

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[192] Nah et al.2001,285- 296

[193] Finney S & Corbett M.2007, 329 -347

[194] A project sponsor is usually a member of top management who is responsible for the business success of the project. Project champion(s) is person/persons within the business unit that is responsible for promoting the project idea from conception to approval.

> *There's a difference between writing something on paper and doing it. If the head of department does not say 'You are going to use it' or is using it himself, the staff are not going to use it.*
>
> *… if you don't have support from top but the DG says 'I will not accept it if it's not on the system', that will force people to use the system…*

The last two comments provide evidence that the users are more likely to use the system if their top management or leaders show support. In short, subordinates prefer to follow what their leaders are doing.

Gunnlaugsdottir [195] has also written about importance of top management support. If top management is not an active supporter of introducing an EDRMS and will not provide an example to follow in using it and instruct others to use it as well, then it is likely that the project will fail.

One interesting observation by one of the interviewees is that a greater percentage of senior members are "technology shy" as compared to their subordinates and they will most likely not support technology-related initiatives.

All interviewees also spoke about lack of general system usage amongst senior managers; middle managers and operational staff were more likely to support and use the system:

> *Most users are at lower levels, for top management you find that you have to print the document out. The whole process is automated until where the document needs to go to DG or top manager and then it has to be printed out.*
>
> *Junior staff and middle managers are the ones who are mostly using the system, top management are using it, but they don't see it as compulsory.*

To try to counter the lack of buy-in by top management, some interviewees felt there was a need to align the EDRMS with top managers' performance agreements.

Top management commitment and support was one of the most widely cited factors affecting EDRMS implementation - numerous examples of top management commitment and support have been shown to lead to success in enterprise systems implementation.[196] The same applies to EDRMS implementations: the literature reviewed in this section supports that

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[195] Gunnlaugsdottir J. 2008,21-39

[196] Finney S & Corbett M. 2007, 329 -347

strong and committed leadership at top management level is essential to the success of any enterprise system implementation.

Change Management - EDRMS implementation is about managing change. In the implementation of an EDRMS, change is about introducing a new way of working that people are not familiar with, namely technology. The common reaction to technological implementation in organisations is resistance to change – which is a cultural issue.

The literature review discussed this factor at length under the topic "Change Management related to EDRMS" of the literature study. The opinions gathered from the interviewees support the literature, in the sense that change management is important, starting at the project inception phase and continuing throughout the entire life cycle.[197]

Most interviewees were of the opinion that incorporating a change management strategy into the EDRMS implementation is critical, as EDRMS success hinges on whether the employees accept or reject this new way of working:

> *We had a changed management strategy, we also included in the charter how we were going to change perceptions and the culture, and how this was to be communicated .If you don't have a strategy in your communications of attracting other users and talk to them about rewards and how they will benefit . . . not all the users are positive when it comes to change; others are negative because they also feel that their jobs are being threatened.*
>
> *To get people to accept and use the new system is the issue. Regardless of the training and change management there is still this mental block. Setting up technology takes time, but the issue is getting people to use the technology.*
>
> *There was huge resistance . . . you are expecting them to share what they don't normally want to share and you are forcing them to change the way they are working.*

Change management is the other most widely cited critical success factor. This concept refers to the need for the implementation team to prepare a formal change management program.

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[197] Nah et al.2001, 285-296

The literature also stresses the importance of having a change manager on board from day one.[198]

Implementation approach – The organisations interviewed either used a "big-bang" or an incremental approach. The big-bang approach proved to be most dominant among the interviewees. One reason quoted was that they had underestimated the size of the organisation and the extent of the implementation.

> *We went on a big-bang implementation, bought the whole enterprise suite and we trained all the units and users on everything. That did not work and we had to go back and implement one module at a time and roll out the system per unit and department.*

5.2.2 Social Factors

User involvement – An implementation in which there is full participation of all affected people in the organisation was perceived to be one of the critical factors. Two of the interviewees started with Joint Application Design (JAD) sessions and drew in their user groups to identify the business and system requirements from them. This was one way in which they involved their users.

One interviewee felt that user involvement at the early stages of the implementation and development process were critical to ensure system usage. What also came out from the interviewees is that the people who are involved in the daily workflow are as critical as their managers. One should therefore ensure the involvement of all levels of the organisation, from top management to operational staff. User involvement was described by two of the interviewees as follows:

> *In the early days, we sent out surveys to members of staff and ask them where they saved documents, what documents they were saving, what application and document types . . . you cannot keep all people happy all the time . . . involve every single person at grassroots level, you skip one person, that's it.*
>
> *We had workshops with units to brief them on what we were doing and sometimes went to them and got feedback on what they wanted to see on the system and what their issues were.*

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[198] Harris R.G.2005

> *If I had to implement the same project, I would take longer to get user requirements and where we want to be in five years and put time into planning . . . Keep statistics from the early point and interrogate and analyse them to ask yourself what are they telling you, why is this person not contributing for a months. If there is a problem, go proactively to the users.*

Most interviewees linked user involvement with the training factor, as they believe that sufficient training gives the users the confidence to interact with the system that is being implemented. Training as one of the critical factors affecting the implementation has been discussed as a separate factor under the same category of factors.
According to AIIM[199], user involvement should be visible throughout the implementation lifecycle; at the outset and selection of EDRMS, during analysis and development, during pilot, during implementation and roll-out; and during steady-state and maintenance. Al-Mashari[200] mentions the need for communication and consultation with various key stakeholders, but in particular with the client.

Vendor involvement and support – This was mentioned under different areas during the interviews Interviewees mentioned that in their vendors they were looking for technical support of personnel, training, skills transfer, development and ongoing maintenance. Interviewees did not regard vendor involvement and support as sufficient during implementation and after.

> *We also had problems with the vendor and we now have our own developers with knowledge and skills and they basically do the work. We don't have to pay consultants to get what we want to do. It's not a permanent solution; they will eventually go. From the vendor there were lots of issues. We took lots of decisions on how we wanted to go and management changed things and the vendor did not like it.*

> *There were some clashes between the vendor and the business side, especially when it came to managing the project and meeting deadlines . . . sometimes the vendor took too long to fix the problems or provide resources just in time.*

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[199] AIIM ECM Master Handbook
[200] Al – Mashari M. 2002, 165 – 170

At first they were here full-time, but now support is not as good as we would like it to be, but I think they don't have enough technicians and being the only company that supports the product, is a challenge.

The two previous statements support the feeling that shortage of skills is a disadvantage when it comes to vendor support. From the comments, it can also be deduced that the relationship between the organisation and vendor can be an issue from the project management side. In all cases the project team was set up in such a way that there was a project manager from the business side and one from the vendor side. The relationship between vendor and the business side, if not handled properly, might delay the progress of the project. Nah et al[201]also support this critical factor, going on to say that teamwork and composition in the implementer/vendor-consultant partnership is a key factor influencing system success. The same is true with EDRMS implementation.

In contrast to all the interviewees, one interviewee did not have any involvement or support issues with the vendor:

We had good relations with the service provider and a proper handover.

Training – As discussed in this section it refers to providing EDRMS users with adequate technical skills to interact with the new system. Interviewees felt that users who did not get adequate training or were not trained at all, were not enthusiastic about using the system. Johnson and Bowen[202] also support this view by noting that if the human elements of the project are important, then special care must be given to training and it should be used as part of change management process. One of the interviewees noted:

We thought it was vital to start with SMS members and then go to MMS members and then to admin people in the roll-out and training . . . I can say it's only partially used, because some users have not been trained. Some units still need more training. Usage is not what we anticipated.

People are not trained because most are not availing themselves. You make lots of follow-ups and eventually a person is not trained. Ensuring that users in the unit are using the system was included in the Performance Agreements of the managers, but

[201] Nah et al.2001

[202] Johnston G.P & Bowen D.V. 2005, 131 -140

> *it's not properly managed. The DG mentioned that he wants managers to manage the usage of the system.*

Ongoing training and refresher training were also mentioned as critical factors, with people leaving the organisation and new people coming in. In the British Library Estates Department EDMS case study, Maguire [203] observes that there can never be enough training given. When people stop using the system, they should be offered refresher training and encouragement to continue using the system. After the initial training, implementation should include scope for refresher training at set intervals, so that no one stops using the system. The literature has also proved that individual training on the job, follow-up courses and support are necessary in order to achieve wide levels of use.[204]

One of the interviewees noted:

> *New staff entering the organisation is energized when entering the organisation. This growth in terms of organisation means that now there are more people, they have different demands that were not there . . . make sure you constantly provide training for administrators, super users and regular users.*
>
> *At some point they were using it, when new people came in there were challenges with training, some people can't use MS Word, you pick that up from the support calls . . . so the system becomes even more difficult for them.*

The training lacked assessment methods of how users are adapting to the system after training that was not done efficiently. Only one interviewee commented on this:

> *Keep statistics from the early point and interrogate and analyse them to ask yourself what are they telling you, what is this person doing, not contributing for a month?*
>
> *On training new users and refresher courses, there must be evaluation and also surveying of end-user satisfaction and checking for gaps. We have gone through lots of upgrades and sometimes need to train everyone.*

The training given did not take place at the right time, so the employees could not immediately use the system after training. The training also took place so far in advance that most people had forgotten what they had been taught when they first had to use the new system.

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[203] Maguire R. 2005,150 – 157

[204] Gunnlaugsdottir J.2008,21 -39

The importance of positioning the training at the right time is supported by Williams[205]; he observes in the National Weights and Measures Laboratory case that training had been one-on-one and tailored to the user so that the users went live immediately while still remembering the training**.**

Henriksen & Anderson[206] further emphasise the importance of user training by stating that there is no difference whether EDRMS implementation takes place in developing or developed countries. Users everywhere do need training in order to integrate the new system into their daily routines.

Effective communication – The importance of communication throughout the project lifecycle has been mentioned by many authors,[207] and communication was mentioned by the interviewees as well as very critical and one of the biggest risk factors in the EDRMS implementation. Where there is no communication system in place, how would people get to know what they need to about the project? Expectations at every level should be communicated.

Communication was also linked to lack of leadership involvement by some interviewees. One interviewee stated that:

> *Our leadership even know less about the project, they do not attend scheduled meetings, send junior staff and no feedback is provided to the leadership about the meeting. It is important for leadership and middle management to communicate the project importance to the rest of the organisation.*

Communication is a primary change management tool that should be used to resolve issues that people have with the project. Communication also ensures that information about the project and its progress reach the right people at the right time and in the right form.

IT and RM partnership – It is critical that partnership and trust are established between the Records Management Team and the IT Team in the implementation of EDRMS. In all the organisations interviewed, the EDRMS implementation responsibility is vested in either the

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[205] Williams D.J. 2005,156 -166

[206] Henriksen H.Z & Anderson K.V.2008, 40-52

[207] Nah et al. 2001,285-296

Records Management Division or Knowledge Management Division, with IT only assuming a support role.

It was discovered during the interviews that the lack of support from the technical team has been a source of frustration in EDRMS implementations. The interviewees felt that the IT team did not always communicate fairly with the RM implementation team on technical matters:

> *Challengers of the system . . . mostly are the technical aspects . . . as RM we are not that clued-up, for instance in database backup. Our IT sections don't have people dedicated to EDRMS. Sometimes there's slowness in the system and IT will say things like 'the line needs to be upgraded.*
>
> *If IT is to help us support the system, they have to understand the Records Management principles and in our organisation they are not even interested to go for RM training; they just say its not IT and if we ask anything technical about the system they will tell you it's IT, not RM.*
>
> *I'm a records manager and archivist and for me this was a huge jungle. There are lots of issues that you are faced with and you don't understand. The person needs to have necessary skills . . . I understand RM but I need to understand the IT resources that I need to manage.*

The importance of communication across different business functions and departments is well known in the IT implementation literature. With the National Weights and Measures Laboratory implementation, Williams [208] observes that if IT and records management functions work closely with each other, that will bring about successful implementation**.**

5.2.3 System factors

Functionality – The resistance to using the new system usually emanates from the system not being user friendly, as one of the interviewees commented:

> *The KISS principle . . . keeps it simple, stupid; that's the lesson we learned from the service provider, or users might not buy in.*
>
> *They are not using it and they will say: it's not user-friendly, this thing. You find that they only need more training on how the system functions.*

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[208] Williams D.J, 2005,158 -166

The interviewees were satisfied with the performance in the terms of functionality.

> *We were able to accomplish what we wanted . . . efficiency, effectiveness, collaboration, openness and transparency.*
>
> *I can say that we are now able to track submissions and decisions that were made . . . so people are starting to save and see the value; even if you are not in your office you can log in and have access to your documents.*
>
> *From the tech point of view, it can do what you want, all bells and whistles, but getting users to use it is an issue/challenge. Systems X looks different to what people are used to Excel, MS Word etc. It's got a different look and feel and users are scared of it.*
>
> *System X is inflexible in some of the functionalities; this can confuse users and cause lots of issues. If you want to work on System X you take it out of the server and check it in on the system . . . people don't want to go through the profile form.*

Although there was clear satisfaction with the functionality, the interviewees spoke of the fact that users find the system difficult to use and more time-consuming than the way they were accustomed to when saving documents. That resulted in negative perceptions and people not using the system. Vachara[209] also found out that if the technology is simple to use, it is easier to adopt. Other characteristics such as functionality, reliability and accessibility influence users' motivation to adopt and use IT/ICT.

One of the lessons learned by Maguire [210] from EDRMS implementation at the Estates Department of British Library is that one should choose a user-friendly system that is as simple as possible to use. His observations are that newer versions of EDRMS products do not allow for a file overview and drag and drop, but most still require the user to add metadata to the records, which will always be resisted.

Integration with RM – The success of an EDRMS lies in its capability to manage the document throughout its lifecycle. This means that it should have record management features to manage the retention, disposal and archiving of records.

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[209] Vachara C. 2005

[210] Maguire R.2005, 150-157

Although the interviewees have a system that is integrated with the records management module, most of them commented that it was either not fully implemented or those that have implemented, that it lacks the capabilities for retention and disposal of documents. This was expressed by one of the interviewees as follows:

> *From an RM point of view DM and RM were two different databases, but now the integration issues have been corrected. Retention policies don't work the way that they're supposed to. We have decided that we are not going to implement electronic RM policies.*

One of the lessons learned from implementing an EDRMS at the Estates Department of the British Library[211], is that the records management principles need to be promoted before a system is introduced, rather than with it. A system based on what people already know needs to be in place before an automated one will have a chance to succeed.

File Plan – A file plan or business classification scheme, as it is commonly known, is the structure an organisation uses for organising, accessing, retrieving, storing and managing its information. A file plan helps in determining appropriate retention periods and disposal actions. Interviewee's view is that the file plan deployment should involve a core team comprising of records management expertise, especially experience in file plan or business classification scheme development. They also suggested that if a skill does not exist internally, it is better to use people from outside the organisation, with experience in the development of one or more business classification schemes. As one interviewee puts it:

> *It's good to have enthusiastic amateurs on board, but don't let them interfere with the classification scheme: that's where you use a qualified person.*

One of the key building blocks of the EDRMS is the corporate file plan. The importance of introducing the file plan and developing it as part of the overall EDRMS project is well known in EDRMS implementation literature. The case study of a Public Records Office of Northern Ireland[212] emphasises the time, skills and resources required in the development of the classification scheme.

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[211] Maguire R 2005, 150-157

[212] Smyth Z.A. 2005, 141-149

The National Weights and Measures Laboratory [213] EDRMS implementation case study considers the efforts that they put in the business classification scheme as one of their critical success factors. This meant that users could find a familiar place to find records.

5.3 Interrelations between factors

The framework that has been developed for this study grouped the factors into three categories: strategic, social and system-related. There is some interrelationship between the three factors – a factor in one group may influence a factor in another group. The framework proposed here not only puts the critical factors into groups, but will also help organisations seeking to implement or in the process of implementing an EDRMS, to understand the interrelationships between the factors in the different groups.

5.3.1 Relations within the strategic factor groups

The strategic factors such as business case, top management support and commitment and change management, showed more interrelations than other factors within the group.

All the people interviewed suggested that the effective implementation of EDRMS relies heavily on a well-formulated business case, which provides a clear direction for effective planning and implementation of the EDRMS. Without a clear business case, it becomes difficult to convince management about the project and thus affects their commitment to and involvement in the project management. Since the implementation of the EDRMS can be disruptive process to the normal operations of the organisation, the process needs change management and project championship be directed by senior management.

When the business benefits of an EDRMS are clarified from the business case, change management issues also tend to be minimised. The interviewees who were originally opposed to the new processes got on board once they understand the promised benefits.

A relationship between the deployment approach and change management was also noted by interviewees: if people have to change, there was a need to deploy new EDRMS systems in phases rather than through a big-bang approach.

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[213] Williams D.J. 2005, 158 – 166

5.3.2 Relations within the social factor group

User involvement is a factor that can be affected by communication. It was observed with the majority of interviewees, that where there were no efficient communication channels, there was little support and involvement from users.

Similarly, where there is a lack of effective communication, user involvement, vendor involvement and support and IT and RM partnership were also lacking.

In general it may be said of this factor group that user involvement, vendor involvement and support, training and IT and RM Partnership can be affected by lack of communication.

User involvement is also seen as related to the training factor. For example, users would have understood the training better and not avoided it if they were involved in the initial design of the system. Most interviewees believed that sufficient training gives the users the confidence to interact with the system.

5.3.3 Relations within the system factor group

RM integration can be affected by the lack of a file plan – if the file plan is properly implemented, there would be fewer of the RM integration issues that were mentioned by most interviewees.

5.3.4 Relations across groups

User involvement is a factor related to social issues and can be affected by top management support and commitment. Management support is also associated with system usage. It was seen in the interviews that the lack of top management support has resulted in lack of user support and involvement. Therefore it is deduced that top management should supply direction, alignment and motivation, through dynamic leadership.

Functionality is a factor related to system issues and can affect user involvement and participation. The interviews revealed that the difficulties in functionality resulted in negative perceptions and users not participating.

5.4 Conclusion

In this chapter, three categories of factors that affect EDRMS implementation were discussed. These factors were then supported with findings from the literature and comments from the

interview transcripts. The next chapter applies the framework of factors affecting EDRMS implementation to the implementation at the Presidency.

Chapter Six
Comparison of the Framework with the Presidency EDRMS Implementation

6 Introduction

In this section, the framework is used to study the Presidency EDRMS implementation. The framework will then be used to gain understanding on the factors affecting implementation at the Presidency. The focus will be on factors that proved to be prominent and those that showed interrelations.

6.1 Relations within the strategic factors

From the strategic factors that were discussed in the previous chapter, three prominent strategic factors emerged: business case, top management support and commitment and change management. These factors will be discussed here in relation to the Presidency.

Top management support has been shown by most studies to be extremely important in EDRMS implementation. This also accords with the interview findings, which show that if top management commitment is not visible during the implementation; the chances of its failure are high.

The relations between these strategic factors are also evident in the Presidency EDRMS implementation:

The business case was an important area of focus for the Presidency when the system was initiated. There was a need to make top management understand why change was happening and why they needed to support it. A clear business case as part of the EDRMS strategy made it possible for the Presidency top management to support the initial phases of the implementation process. This is supported by the case study conducted by Nah et al[214] looking at the critical factors for the successful implementation of enterprise systems. They

[214] Nah et al.2001,285 -296

argue that alignment with the strategic business goals is critical for any enterprise system to succeed.

During the initial implementation of the EDRMS at the Presidency, the project champion and sponsors were clearly visible. This observation is also made by Jiang Yingjie where he links the successful implementation of EDRMS with the assurance that top management support assumed roles such as championship and sponsorship.[215]

The lack of support and commitment started to become apparent when the project champion left the Presidency and was not replaced. With the staff turn-over and new people coming in, it became more difficult to obtain support and commitment from senior executives.

Nah, et al[216] warn that unmaintained support can lead to failure and that support is needed throughout the implementation.

Change management and top management support factors were also seen to be linked. At the initiation of the project, the Presidency had no specialised change management team to focus on the project: top and senior management of the Presidency were viewed as the leadership for the EDRMS. The change management strategy and plan was put in place at a later stage of the project, when there was already an absence of project championship**.** Researchers in information systems implementation and change management have always stressed the importance of including change management throughout the project life-cycle**.** With the Presidency, change management was only introduced at the latter phase of the project, which was seen as a reason for the lack of support. The literature also stresses the need to have a change manager on board from day one.[217] Although change management was identified as crucial throughout the project lifecycle, one interview revealed a case where change management was included earlier in the implementation, but still did not ensure the complete success of the implementation.

At the Presidency there was a lack of change leadership during the implementation, to make those affected by the change aware of how the system would impact on business in general and on their specific units' operations in particular – this resulted in staff not buying into the system. For change to happen, visible executive presence in understanding and promoting the

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[215] Jiang Y.2005

[216] Nah et al.2001, 285 – 296

[217] Harris R.G.2005

project is needed[218]; in addition the employees need to be told in advance of the scope, objectives, activities and updates and to realise that there would be change in their work procedures.[219] This element was lacking in our client organisation.

6.2 Relations within the social factors

Throughout the interviews, social factors related to the system emerged strongly, with communication playing a critical role. This factor has been highly rated by many authors: Woo[220] suggests that without effective communication, there was no structured way for employees to find out what was happening in the company and the project, and that could lead to project failure.

The relationship between user involvement and communication was evident in the case of the Presidency. Communication about user requirements, the scope of the project, updates about the project and the project team were largely absent. The main source of communication during the implementation was an EDRMS newsletter, which only appeared twice. This newsletter was supported by E-mails and face-to-face communication with different stakeholders; unfortunately people tend not to read E-mails or simply delete them.

Although The Presidency used these methods of communicating with users during the implementation, most of them remained uncertain about who to talk to about specific issues or problems. This uncertainty resulted in negative perceptions for some users.

The framework also pointed to vendor involvement and support, training and IT and RM partnership and how the process can be affected by a lack of communication. To ensure that communications between the implementer and the vendor are maintained, Nah, et al [221] recommend regular scheduled meetings to enhance communications and cooperation.

During the initial stages of the implementation, vendor involvement and support were clearly evident, made possible by the fact that there were monthly meeting to examine the issues and status of the project. During post-implementation and maintenance, the meetings became fewer and were only called to resolve issues that threatened to get out of hand.

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[218] CS Holdings
[219] Nah et al.2001,285 - 296
[220] Woo H.S. 2007,431 - 442
[221] Nah et al. 2001,285 - 296

The absence of clear communication channels also caused delays in resolving issues or assigning resources on time. This area showed tremendous improvement once the vendor had appointed a dedicated project manager and also resumed the monthly meetings with the vendor.

There were good communications between IT and Records Management, because they were both part of the project team when the project was initiated. The present structure could have also contributed to communications, as IT and Records Management fall under one directorate, IT & Knowledge Management, which made ownership of the project a joint effort.

It is not uncommon to find that EDRMS implementation is viewed as an IT project – in his case study of Chinese Enterprise, Woo[222] suggests that this view should be countered, because EDRMS implementation should be treated as something more than a simple technological challenge. Attention should be paid to the human aspects of the system, user acceptance, user training and ongoing user support, if real benefits are to be achieved.[223]

6.3 Relations within the system factor group

These system factors were least prominent at the Presidency, compared to the two other factors mentioned earlier. System factors mostly relate to the usability of the system. Henriksen &Anderson[224] also see a lack of usability as a possible obstacle and recommend flexibility and user-friendliness as important aspects. In support of this view, Maguire takes a lesson from implementing EDRMS at the Estate Department of British Library, in that one needs to choose a system that is as user-friendly as possible.[225] A link with system-related factors was also found in the case of the Presidency, although it did not have such a strong influence on system usage.

The relation between RM integration and file plan was also found at the Presidency. File plan implementation and the approval process took longer than expected. The Presidency ended up with the parallel implementation of the file plan and the system. The delay in the file plan implementation affected the full integration with the RM module of the system.

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[222] Woo H.S. 2007,431 - 442

[223] Johnston G.P & Bowen D.V.2005.131-140

[224] Henriksen H.Z & Andersen V.A. 2008.40 - 52

[225] Maguire R.2005.150-157

This could have been avoided if the file plan implementation could have been successfully implemented before the EDRMS implementation; the successful implementation of the EDRMS is concerned with managing records throughout their life cycle and the file plan is a tool for helping to achieve that. Smyth.[226] stresses the importance of staff being familiarised with the file plan and accepting the cultural change of sharing information before the implementation of the software – the best way to achieve this is to involve staff in the development process and allow time for the cultural process to be embedded.

6.4 Relations across groups

The study found evidence for useful relations between top management support and commitment; and user support and involvement. Top and senior management are the leaders of the EDRMS project at the Presidency. There is wide acceptance that the involvement of leadership is critical in order to facilitate the implementation of the project and the buy-in of users in their units. The required level of top management support and involvement was lacking during the implementation of the EDRMS at the Presidency. This lack of commitment and support was evident in the following areas:

Training scheduled for top managers was either cancelled or not attended. Many authors[227] have noted this aspect as critical in order to achieve implementation success. The impact of this was clearly evident in units where senior and top management were not actively involved; staff members did not fully support or use the system.

The lack of management support was also seen in the business process mapping exercise. In most instances managers were too busy to attend the sessions and delegated this to lower level staff. This just proved that there is no substitute for leadership involvement, as their absence led to delays in some of the critical decisions that needed to be made.

User involvement at the Presidency was evident in the following project phases:

- functional design specification
- system design specification
- technical design specification
- testing, and

[226] Smyth Z.A, 2005.141 - 149

[227] Henriksen H.Z & Andersen V.A, 2008.40 - 52

- procedure development.

Users were very active in leading functional design and system design with some participation by IT. In relation to the technical design, IT mainly led with input from users. Testing was also done with main input from user groups. In all the phases there were interviews, focus groups and workshops with the users. Users also worked closely with SITA and the service provider in mapping out business processes and training the ultimate users of the system.

Although there was some measure of consultation while this was underway, it was also business as usual at the Presidency and not all people who were critical to these workshops gave inputs in the sessions; in some cases people who had little knowledge about the business would be sent to attend the workshops. This did not benefit the functionality of the system.

The interviews show that although there was general satisfaction with the functionality of the system, there was dissatisfaction with its integration with the workflow system. Some of the functionality that was promised to the users during the JAD sessions was not fully delivered.

The users also considered filling in the metadata or profile forms to be more time-consuming than the previous procedure for saving documents, which they preferred to that imposed by the new system. Maguire[228] also noted that adding metadata to the document would always be met with resistance from the users. This also holds true for the Presidency. Communication was also found to impact on the Strategic Factors group, Social Factors group and the System Factors group.

Communication about the system at the Presidency should have commenced earlier in the implementation process for it to be regarded as a success. Communicating about the system only ran in parallel with the change management strategy and plan, which also came later in the implementation process. There was no process to ensure communication with stakeholders.

Communication about the project, business benefits linked to the project and project milestones such as *go-live dates*, were not well communicated to the whole organisation. The newsletter about the project was not sustained, which resulted in users not knowing who to communicate with when they wanted to talk about the system. All initial communication needed to focus on the business case for implementing the EDRMS, but the business benefits that were communicated to top management were not reinforced with the users through continuous communication.

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[228] Maguire R.2005,150 – 157

6.5 Conclusion

The framework developed in this research was compared and contrasted with the Presidency-specific implementation. The critical factors affecting implementation at the Presidency were discussed in line with the framework and literature.

The next chapter provides conclusions and recommendations that could be usefully employed by the Presidency and other organisations that seek to implement EDRMS.

Chapter Seven
Conclusion and Recommendations

7. Introduction

This chapter focuses on drawing conclusions based on results of the study and how the results reflect the factors affecting the EDRMS implementation at the Presidency. The chapter also makes recommendations to research organisations, which could be of use to other organisations that seek to implement EDRMS.

The chapter concludes by highlighting an area of possible future research based on the observations of the researcher about the factors affecting EDRMS implementation in five Government organisations, including the client organisation. The contribution made by this research will extend beyond the Presidency and become a guideline for any organisation that plans to embark on a similar exercise.

It is of importance to read the conclusions made here within the context of the organisation under study, bearing in mind that the organisational setting is dynamic – the concept of EDRMS is gaining popularity in Government, but the factors affecting its implementation remain varied.

7.1 Summary of findings

This study aims to improve the understanding of factors affecting EDRMS implementation with special reference to the Presidency. The factors affecting an EDRMS implementation have been found to be vast – a total of 13 factors for EDRMS implementation have been identified, based on the interviews and a review of the related literature. The three broad categories of factors affecting implementation were identified as

- strategic
- social, and
- system specific.

All three of these categories have been found to constitute core factors in any EDRMS implementation.

The study has also highlighted areas where some factors have been shown to make a bigger impact than others. The factors relating to strategic and social factors were more prominent in the EDRMS implementation and require special attention. Within these main factor categories, top management support and commitment and change management have a profound effect on EDRMS implementation.

In addition, we have identified the importance of communication and user involvement in the implementation process to rank high among the social factors.

The significance of relations within categories and across categories was also demonstrated. The study revealed that user involvement can be affected by top management support and commitment. If the required level of top management support and involvement is lacking during the implementation of the EDRMS, user involvement tends to be low.

System factors were found to be least prominent at the Presidency, compared to the two other factors. The study has also shown that although system factors enjoyed less prominence during the course of the study, their importance in the implementation process is as important as the other two factors. This view is also based on the review of literature and the experiences of the organisations investigated in the study.

The factors that have been identified could be used by other institutions as guidelines for a framework or benchmark for implementing EDRMS. The study found some similarities in the factors affecting EDRMS implementation within the government and also identified a need for further research that could focus on how these factors differ among various types of organisations.

The research contributes to EDRMS studies and practice by using the case-study research method to assess the factors relating to the adoption and implementation of the system. The study was not only able to uncover factors relating to adoption and implementation of the system but also factors relating to the post implementation of EDRMS.

7.2 Have the objectives of the study been achieved?

The study sought to investigate various experiences of EDRMS implementation in government and analyse factors affecting the implementation with special reference to The Presidency.

The researcher used qualitative research methods to uncover experiences of EDRMS implementation from five different organisations. The semi-structured interview approach,

used for conducting interviews revealed more information about the particular organisation implementation process.

The observation method applied to the research organisation was able to help the researcher to study all areas of behaviours around EDRMS implementation at the Presidency that would not have been normally revealed by other research methods.

The study used information obtained from literature on EDRMS, interviews, and observation as a basis for establishing a framework that could be used as a benchmark to study factors affecting EDRMS implementation.

Information revealed through literature review, interviews and observation helped to develop a framework of factors affecting EDRMS implementation. The study discovered 13 key factors, that were classified as strategic, social and system related.

The framework was used to compare links between factors affecting EDRMS implementation at the Presidency. Understanding and appreciation of the factors affecting implementation of EDRMS with various departments helped in identifying a set of recommendations and areas that need further research.

7.3 Recommendations

The purpose of this section is to provide recommendations to the research organisation, based on the data collected by literature review, interviews and observation.

7.3.1 Custom-made training to meets user needs

One of the challenges for a company implementing EDRMS is to find an appropriate plan for training end-users so that they will continue to use the system after it has been implemented. Currently users are given one-on-one training on the basic functionalities of the system. The training needs to be paced according to unit requirements. For users to fully understand how the system impacts on their function, they need to understand the various business processes behind the EDRMS.

Training new users of the system also creates some difficulties, including the diversity of the users, the complexity of the new systems and the variety of training methods. Basic training forms have been suggested by Jiang Yingjie[229] as:

- Web-based virtual training
- computer-based training
- video courses

[229] Jiang Y. 2005

- self-study manuals, and
- pop-up help screens

It is recommended that training method be paced correctly, with a lot of practice sessions in between; so that employees are given time to fully understand the system and what they are supposed to do. Manuals must be simplified and adapted so that knowledge transfer is effectively done. People need step-by- step guides and easy tips to follow, for them to adapt to the new system. Internal training capacity needs to be developed to deal with ongoing training needs.

What came out of the interviews was the lack of policies and procedures that support EDRMS implementation. In most cases the policies and procedures only came long after the implementations, usually as corrective measures once it became evident that the users were not complying. It is important to ensure that EDRMS processes and procedures are part of the way that people do their jobs, that these processes and procedures are integrated in policy and procedure documents and induction packs and that this is communicated formally in briefing and training sessions to the intended users.

There are no accepted South African EDRMS standards, so the standards built into the EDRMS software itself could serve as a point of departure, but would need to be supplemented by the development of specific policies, procedures and services to ensure effective use of the EDRMS after training.

7.3.2 Top management buy-in, sponsorship and links with corporate strategy

The interviewees felt that the EDRMS lacked alignment - a leadership function – with organisational strategic objectives. Top management should be able to see an EDRMS as part of the broader organisational strategy and business goals. If top management embraces this approach EDRMS will be given the necessary support and sponsorship it deserves.

There is a need for a clear and shared vision of where the organisation is going and how the project fits into the journey.

Effective strategies should be put in place to deal with issues of leadership involvement.
The interviews and literature review provide evidence that the EDRMS project cannot succeed without the involvement of the leadership, who must understand the system, the

needs of their departments, how the system impacts on the business as a whole and their branch's procedures in particular.

Effective strategies that can be adopted to deal with issues of leadership involvement include:

- getting a higher authority to direct leadership to get involved in the project
- the project team changing their approach to getting this involvement
- providing the leadership with support and coaching on their roles for chance.

The last strategy could be effective in getting leadership involvement in the project. Once managers understand their role in the project, a formal contract can be put in place, which can be included in their performance contract and measured.

7.3.3 Post-implementation programme

An EDRMS should not be allowed to continue indefinitely without a post-implementation review in place. None of organisations interviewed had a post-implementation programme in place, while the lack of post-implementation evaluation measures meant that any shortcomings in the implementation and operational processes are left undetected.

The most important aspect of the post-implementation programme is ensuring that its benefits were being realised. All benefits, tangible and intangible, need to be well managed. For tangible benefits, financial implications need to be managed to ensure that the Presidency gets a return on its investment from its EDRMS. *Dis-benefits*, both tangible and intangible, will also need to be managed. Tangible dis-benefits include implementation cost, ongoing system management, ongoing costs of system management and administration, training and scanning.

For the Presidency one of the dis-benefits that need to be managed are people who print documents from the system when travelling to other centres, especially the Cape Town office. This is viewed as a dis -benefits because of the high cost of printing and also users not completing the automated processes on the system.

Monitoring user feedback and acting on it need to be included in the post-implementation programme. The help desk report will provide the Presidency team with a baseline for assessing how users are coping with the new system.

The team should have standing meetings to access problems/issues that users are experiencing. An electronic questionnaire as part of the post-implementation review will also

throw light on how users are interacting with the system. This could be distributed via MS Outlook and the feedback will give pointers to areas that need further enhancement and attention.

7.3.4 A dedicated change management programme from inception

Change management has been widely cited in EDRMS implementation literature and the EDRMS implementation literature and most of the interviewees stress the need to include a change management from day one. The implementation of an EDRMS has a great influence on how people work and they will need cognitive and emotional support throughout the implementation process and for a reasonable time after the implementation**.** There should be a dedicated change manager to implement the adopted change management strategy and plan. The plan should provide details of change management interventions in the following components:

- leadership and sponsorship
- stakeholder commitment
- change-specific communication
- organization alignment, and
- change team and change capacity.

Continuously marketing of EDRMS by using a push-pull approach should be made a priority. Communication about the system investigated was not adequate; communication needed to commence as soon as possible, which did not. There is a need for a continuous and visible campaign with consistent key messages to create awareness of and credibility for the project. To improve creditability, high-level messages need to be communicated regularly by the leadership.

Interactive communication to provide opportunities to engage employees and enable them to participate in the success of the project should also be put in place.

By institutionalising change, there is a greater chance of making it permanent. By including the proper use of EDRMS processes and procedures in the performance management process of employees it becomes measurable; employees are encouraged to use it as it affects their ratings at the end of the year. Another benefit of including it in the performance management process is that interventions can be implemented and monitored where employees are not adhering to the new processes.

7.3.5 Denying access to work on other network drives

Giving people the option of working on both their C drives or other network drives and EDRMS simultaneously, unnecessarily delays the process. Once training is provided and there is sufficient buy-in of the system, then employees should work on the EDRMS straight away and not have an option to work on other drives.

However, for the sake of proper housekeeping, employees should be able to access documents on their C drive and when they open and work on their documents; they will then have to save on them to the new system. This will facilitate the uploading onto the system of only those documents that are in use – those documents that have not been used after six months can then be archived or destroyed, depending on the records management disposal schedules. Access to other drives should then be restricted completely after an agreed interval.

Development of a migration plan should also be considered. (Document migration refers to moving the documents from the previous system to the new EDRMS solution).The interviewees were concerned that even after the EDRMS implementation; documents were being still saved in different locations without being classified. This was hindering the users, as they had to perform long and unsuccessful searches in order to retrieve the documents.

Most interviewees were of the view that powerful searches should be one of the important features of the EDRMS, which it was not. Where users cannot find what they are looking for, they lose interest in using the system.

The migration of documents from various sources is the responsibility of the organisation during transition. When implementing EDRMS little attention is often given to existing documents, as they reside on shared drives or personal drives. Users may be frustrated as they need to work on documents in various locations. It is therefore very important to have a migration plan that will enable the collection all relevant existing documents, to move them into the new EDRMS and classify them in accordance with the chosen attribute and security model.

7.3.6 Integration of the system before implementation

EDRMS Systems need to consider linking a number of solutions such as electronic document management system, electronic records management system, and workflow solutions into a unit. If the system is to be integrated, especially with third-party software systems, some aspects need to be considered during the business case stage.

The implementation team should look at cost versus benefits, the risks involved, how the implementation will be done and what the dependencies are. Planning should be done in such a way that there are competent resources for completing the integration. If integration is left until very late in the implementation, it could delay the implementation process.

File plan design and deployment have a major impact on the usability of the system, so their design and deployment must maximise ease of use and performance for users. The file plan should go through the user consultation and approval process of National Archives, which usually takes long and is usually underestimated in terms of planning. The file plan needs to be started as early as possible and users have to be involved from the outset. In the project plan, enough time should be set aside for consultation meeting and workshops with various business units.

The integration of the EDRMS with the file plan is important in the implementation process. Each element of the integration should be planned and the right people need to be involved, for example, IT, Records Manager, business units and users.

7.3.7 A disaster recovery plan must be in place at the start

Although interviewees acknowledged the importance of a Disaster Recovery Plan, most did not have one in place after the system implementation. If this is left until after implementation, it will have a serious impact if the system goes down, as documents will not be available.

7.4 Further Research

The research covered four Government departments and one semi-Government organisation. The time limitation for this research did not allow for a comparison between findings on different types of organisations. Since the focus was only on Government departments, further research could focus on how these factors differ among various types of organisations,

i.e. between Government organisations and the private sector. Different conclusions might therefore be derived by studying different types of organisations. Research needs to be undertaken to establish whether the impact of identified factors may differ between smaller organisations.

Further research could also be conducted on the two strategic factors, top management support and commitment and change management, that have proved to have significant impact and are extremely important in an EDRMS implementation.

The study has also highlighted some cases where some factors were well considered during implementation. A further look at these factors that have been applied successfully by some of these institutions can be used to create a framework for institutions that want to implement EDRMS.

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Appendices

Appendix A : Interview Guide

1. Could you give a brief history/lifecycle of your EDRMS implementation process in your organisation, from the time of the project inception to date?
2. How many months was the implementation planned to take and how long did the actual implementation take?
3. What lessons have you learned during the implementation?
4. What are your perceptions on the critical factors to the implementation of EDRMS?
5. How many modules did you implement and how many are fully functional?
6. Were all the required functionalities of the system accomplished?
7. What has been the impact of the system on the organisation?
8. What do you feel are the challenges of the system?
9. From your evaluation, would you say that the system is being successfully used?
10. How would you rate the usage of the system? For example do you have more top management, middle management or operational staff using the system?
11. What are users' perceptions and attitudes towards the system?
12. If you were to implement all over again, what would you do differently?

Appendix B: Consent to participate

Thesis Title: **Factors affecting the implementation of an electronic document and records management system in the SA Presidency**

You are invited to participate in the research that aims at discovering human, technical and strategic factors that affect the implementation of Electronic Documents and Records Management Systems (EDRMS).

You have been chosen for the interview because your organisation has implemented EDRMS. All information collected from the participants will be kept secure and only made available to the researcher and the supervisor. Participation is entirely voluntary and the participants can withdraw any time before the completion of the data collection.

Interviews will be audio taped and transcribed so that the researcher can review the discussions. In the recorded information and final report your name would not be revealed.

Any concerns regarding the nature and the conduct of this research should be directed to the supervisor **Daniel F Botha, Centre for Knowledge Dynamics & Decision Making** Department of Information Science, University of Stellenbosch, **dfbotha@sun.ac.za**, 021 808 3803

I agree to participate and be audio taped for this study. The study has been explained to me to my satisfaction.

Signature/Printed Name of Participant Date

Signature/Printed name of the Researcher Date

Appendix C: The Presidency value chain